

First report of *Eustiromastix spinipes* (Taczanowski 1872) (Araneae: Salticidae: Saltafresia) from Colombia, with new salticid records for the Department of Córdoba

Leiner A. Suarez-Martinez^{1,2} and Edwin Bedoya-Roque^{1,3*}

¹Universidad de Córdoba. Facultad de Ciencias Básicas. Departamento de Biología. Semillero Marinos. Grupo de Estudio en Aracnología. PALPATORES. Montería. Colombia.

²email lsuarezmartinez98@correo.unicordoba.edu.co

³Universidade Estadual de Goiás. Laboratório de Ecologia Comportamental de Aracnídeos. Programa de Pós-Graduação em Recursos Naturais do Cerrado. Anápolis, GO. Brasil, email roquemeedj@gmail.com

Abstract. Nine species of the family Salticidae are identified from the Department of Córdoba, Colombian Caribbean. *Eustiromastix spinipes* (Taczanowski 1871) is reported for the first time from Colombia. The known distribution of *Breda lubomirskii* (Taczanowski 1878), *Lurio solennis* (C. L. Koch 1846), *Pachomius dybowski* (Taczanowski 1872), *Tanybelus aeneiceps* Simon 1902, and *Xanthofreya albosignata* (F. O. Pickard-Cambridge 1901) is extended to include the Department of Córdoba. New records are also provided for *Helvetia albovittata* Simon 1901, *Leptofreya ambigua* (C. L. Koch 1846), and *Scopocira dentichelis* Simon 1900.

Keywords. Arachnida, jumping spiders, Neotropical, zoogeography

Introduction

Presently 125 species of salticid spiders, placed in 52 genera, are known from Colombia (WSC 2021; Metzner 2021). For the Department of Córdoba, a total of 22 species have been recorded, distributed in the lower elevations of the northern part of the Department of Córdoba (Bedoya-Roque & Lopez-Villada 2020). Here we add six species to that number, for a total of 28 (Table 1; Appendix 1). The main objective of this study is to document for the first time the presence of *Eustiromastix spinipes* (Taczanowski 1871) from Colombia, and based the identification of adult individuals, to increase the known distribution of some species to include the Department of Córdoba.

The Department of Córdoba is located in the north of Colombia, in the Caribbean region (Figure 1), between 9°26'16" and 7°22'05"N, and 74°47'43" and 76°30'01"W, with an area of 23,980 km², which represents 2.1% of the territory of Colombia, with an average annual rainfall of 1,300 mm per year, an average annual temperature of 28°C, and an average elevation of 100 meters above sea level. The characteristic vegetation of the Caribbean region includes Tropical Dry Forest (Bs-T) in the lower zone and the Tropical Humid Forest (Bh-T) in the upper zone (IGAC 2009; Racero-Casarrubia et al. 2015). Considering the two surface hydrographic basins and the independent basins located northwest of Córdoba, this department is subdivided into six subregions (Alto Sinú, Medio Sinú, Bajo Sinú, San Jorge, Savanna and Coastal), based on administrative aspects and common environmental interests (Ballesteros & Linares, 2015).

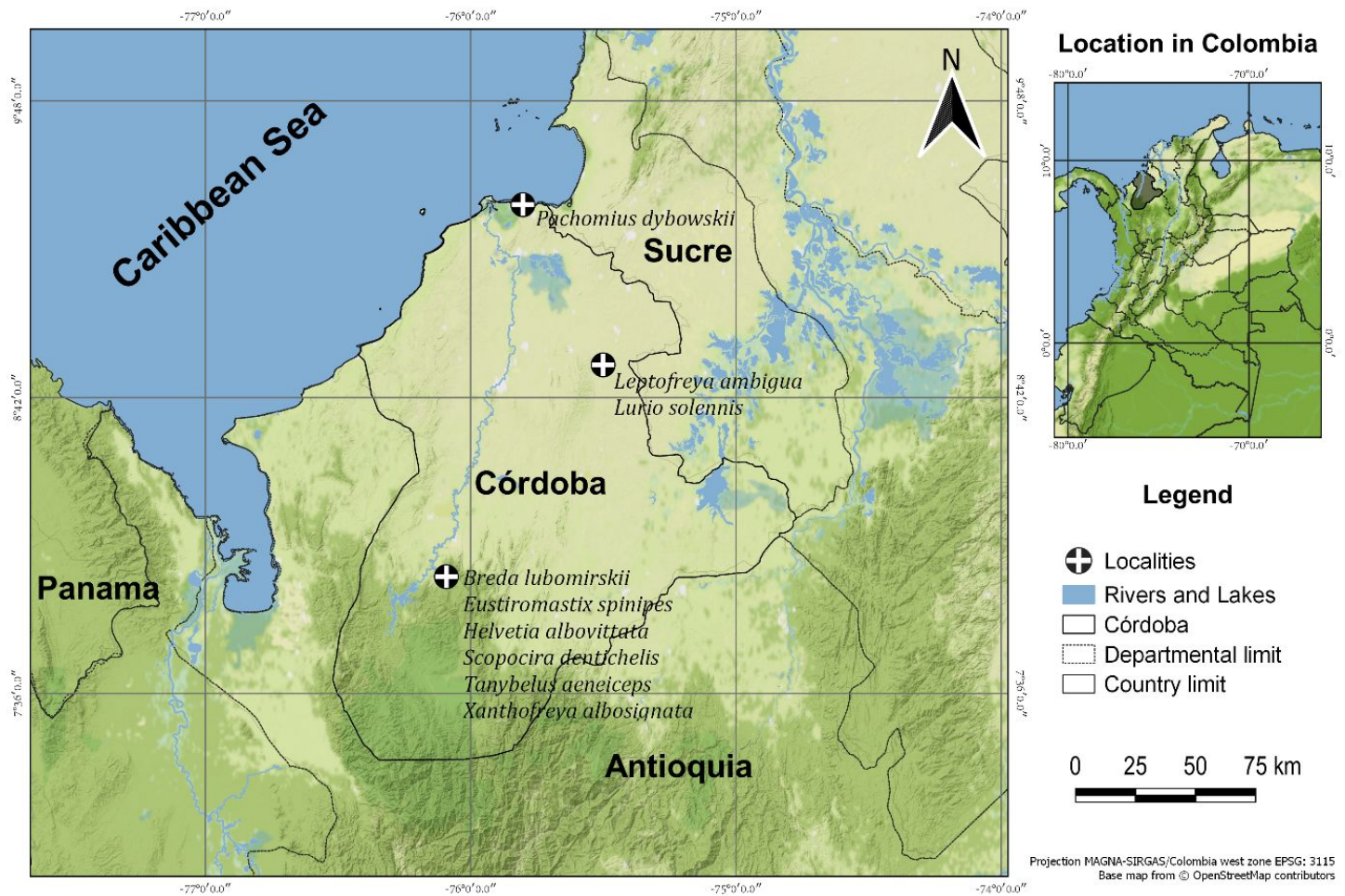


Figure 1. Location of collection sites in the Department of Córdoba, Colombian Caribbean. Map credits: © OpenStreetMap contributors, base map, and data from OpenStreetMap and the OpenStreetMap Foundation.

Materials and methods

Field phase. Spider sampling was carried out during the daytime (08:00-13:00), using either 1) entomological sweep nets to make double passes over herbaceous vegetation or bushes, 2) agitation of foliage or shaking of tree branches and collection of spiders with a 1 m² white ground cloth, or (3) manual collection. After collection spiders were deposited into bottles containing 70% ethyl alcohol.

Laboratory phase. Multifocal photographs of the genitalia were taken with an HD digital camera coupled to a Carl Zeiss stereomicroscope, Axiostar, and then merged with the AxioVision Carl Zeiss SE64 image stacking software (Rel. 4.9.1. SP3). Measurements in millimeters were taken using a micrometer attached to a Carl Zeiss stereomicroscope, Axiostar, in conjunction with AxioVision Carl Zeiss SE64 software (Rel. 4.9.1. SP3). The material examined was deposited in the Entomology Laboratory of the University of Córdoba, Colombia (LEUC-OARA).

Species names were verified against the current taxonomic nomenclature in the World Spider Catalog (WSC 2021) and the Jumping Spider Catalog (Metzner 2021). Classification of salticid tribes was based on the following order of priority: Maddison (2015), Maddison & Szüts (2019) and Maddison et al. (2020). Morphological terms follow Galiano (1963).

Abbreviations used in the text. 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; F= femur; LOQ= length of ocular quadrangle (ALE-PLE inclusive); M= metatarsus; 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; TU= tuberosity. Unless otherwise noted, measurements and scales are in mm. Museum collections:

AMNH	American Museum of Natural History, New York, USA.
FDACS	The Florida Arthropod Collection, Division of Plant Industry, Gainesville, USA.
MACN	Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Buenos Aires, Argentina.
MCZ	Museum of Comparative Zoology, Harvard, Cambridge, Massachusetts, USA.
MIZ	Museum and Institute of Zoology, Polish Academy of Science, Warsaw, Poland
MNHN	Museum National d'Histoire Naturelle in Paris, France.
MZUF	Museo Zoologico di Storia Naturale "La Specola", Università degli Studi di Firenze, Florence, Italy.
NMB	Naturhistorisches Museum, Basel, Switzerland.
ZMB	Museum für Naturkunde, Berlin, Germany.

Results

Table 1. Jumping spider species reported by this study for subregions of the Department of Córdoba, Colombian Caribbean.

	clade	species	sex	environment	subregion
**	Amycoida: Bredini	<i>Breda lubomirskii</i> (Taczanowski 1878)	♀	humid forest	Alto Sinú
**	Amycoida: Sarindini	<i>Tanybelus aeneiceps</i> Simon 1902	♂	humid forest	Alto Sinú
	Amycoida: Scopocirini	<i>Scopocira dentichelis</i> Simon 1900	♂	humid forest	Alto Sinú
**	Marpissoida: Dendryphantina	<i>Lurio solennis</i> (C. L. Koch 1846)	♂	savanna areas	Bajo Sinú
	Saltafresia: Chrysillini	<i>Helvetia albovittata</i> Simon 1901	♂	humid forest	Alto Sinú
*	Saltafresia: Freyina	<i>Eustiromastix spinipes</i> (Taczanowski 1871)	♀	humid forest	Alto Sinú
	Saltafresia: Freyina	<i>Leptofreya ambigua</i> (C. L. Koch 1846)	♂	humid forest, dry forest	Alto Sinú, Savanna
**	Saltafresia: Freyina	<i>Pachomius dybowskii</i> (Taczanowski 1872)	♂	mangrove forest	Coastal
**	Saltafresia: Freyina	<i>Xanthofreya albosignata</i> (F. O. Pickard-Cambridge 1901)	♂	humid forest	Alto Sinú

*New record for Colombia. **New records for Department of Córdoba.

Taxonomy

New records for the family Salticidae from the Department of Córdoba, Colombian Caribbean

Salticinae: Amycoida: Bredini: *Breda* Peckham & Peckham 1894
Type species *Breda milvina* (C. L. Koch 1846)

1. *Breda lubomirskii* (Taczanowski, 1878), Figure 2A

Marpissa lubomirskii Taczanowski, 1878; *Breda lubomirskii* Peckham & Peckham 1894; Platnick, 2013.

Material examined. 1♀ [Figure 2A], Colombia, Córdoba, Tierralta: TuisTuis. This locality can be associated with approximate coordinates of [8°2'2.881"N, 76°5'29.993" W], [178m], 3 Dec 2014, humid forest, manual collection, E. Bedoya–Roqueme leg. (LEUC; OARA-099). Type material deposited in the MIZ, MCZ not examined.

Diagnosis. The female *B. lubomirskii* (Figure 2A) can be identified by the presence of a longitudinal median abdominal stripe completely covered with orange scales (Ruiz & Brescovit 2013, fig. 63), as well as the appearance of the epigynum and spermathecae (see Ruiz & Brescovit 2013, figs. 66-67).

Measurements (specimen from Colombia). One female: TL= 15.7; CL= 6.17; CW= 4.42; AL= 9.44; AERW= 3.47; PERW= 3.27; LOQ= 2.12; PME=0.32; eyes of the second row separated from the ALE by 0.30 mm and from the PLE by 0.34 mm.

Natural history. This species is known from various locations and environments in Brazil, Colombia, Ecuador, and Peru (Ruiz & Brescovit 2013). Our female was collected by hand in low shrub vegetation at an elevation of 178 meters above sea level.

Distribution. Brazil, Colombia, Ecuador, Peru.



Figure 2. Habitus, dorsal view. **A**, Female *Breda lubomirskii*. **B**, Male *Tanybelus aeneiceps*.

Salticinae: Amycoidea: Sarindini: *Tanybelus* Simon 1902
Type species *Tanybelus aeneiceps* Simon 1902

2. *Tanybelus aeneiceps* Simon 1902, Figure 2B

Tanybelus aeneiceps Simon 1902; Galiano 1963; Galvis & Muñoz-Charry 2017; Prószyński 2017.

Material examined. 1♂ [Figure 2B], Colombia, Córdoba, Tierralta: TuisTuis. This locality can be associated with approximate coordinates of [8°2'2.881"N, 76°5'29.993"W], [178m], 3 Dec 2014, humid forest, manual collection, E. Bedoya–Roqueme leg. (LEUC; OARA-094). Type material deposited in the MNHN not examined.

Diagnosis. According to Galvis & Muñoz-Charry (2017) males of *T. aeneiceps* (Figure 2B) can be easily identified by their long embolus that wraps around the periphery of the bulb, and a short, pointed RTA with a small protuberance in its base (see Galvis & Muñoz-Charry 2017; figs. 2a-d).

Measurements (specimen from Colombia). One male: TL= 4.95; CL= 2.37; CW= 2.35; AL= 2.29; AERW= 2.46; PERW= 2.53; LOQ= 2.14; PME=0.32; eyes of the second row separated from the ALE by 0.32 mm and from the PLE by 0.36 mm.

Natural history. In Colombia this species was previously recorded in secondary cloud forest at elevations between 600-2700 m (Galvis & Muñoz-Charry 2017). Here we report *T. aeneiceps* associated with shrub vegetation in tropical humid forest at an elevation of 178 meters above sea level.

Distribution. Brazil, Colombia, Venezuela.

Salticinae: Amycoidea: Scopocirini: *Scopocira* Simon 1900
Type species *Scopocira dentichelis* Simon 1900

3. *Scopocira dentichelis* Simon 1900

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

Material examined. 2 ♂, Colombia, Córdoba, Tierralta: TuisTuis. This locality can be associated with approximate coordinates of [8°2'2.881"N, 76°5'29.993"W], [178m], 3 Dec 2014, humid forest, manual collection, E. Bedoya-Roque leg. (LEUC; OARA-204). Type material deposited in the MCZ, MNHN not examined.

Diagnosis. For diagnosis and further taxonomic information, see Galiano (1963) and Costa & Ruiz (2014).

Distribution. Belize, Colombia, Honduras, and Panama.

Salticinae: Marpissoida: Dendryphantina: *Lurio* Simon 1901
Type species: *Lurio solennis* (C. L. Koch 1846)

4. *Lurio solennis* (C. L. Koch 1846), Figure 3A-B

Hyllus solennis C. L. Koch, 1846; *Lurio solennis* Simon 1901; Crane 1945; Prószyński 2017.

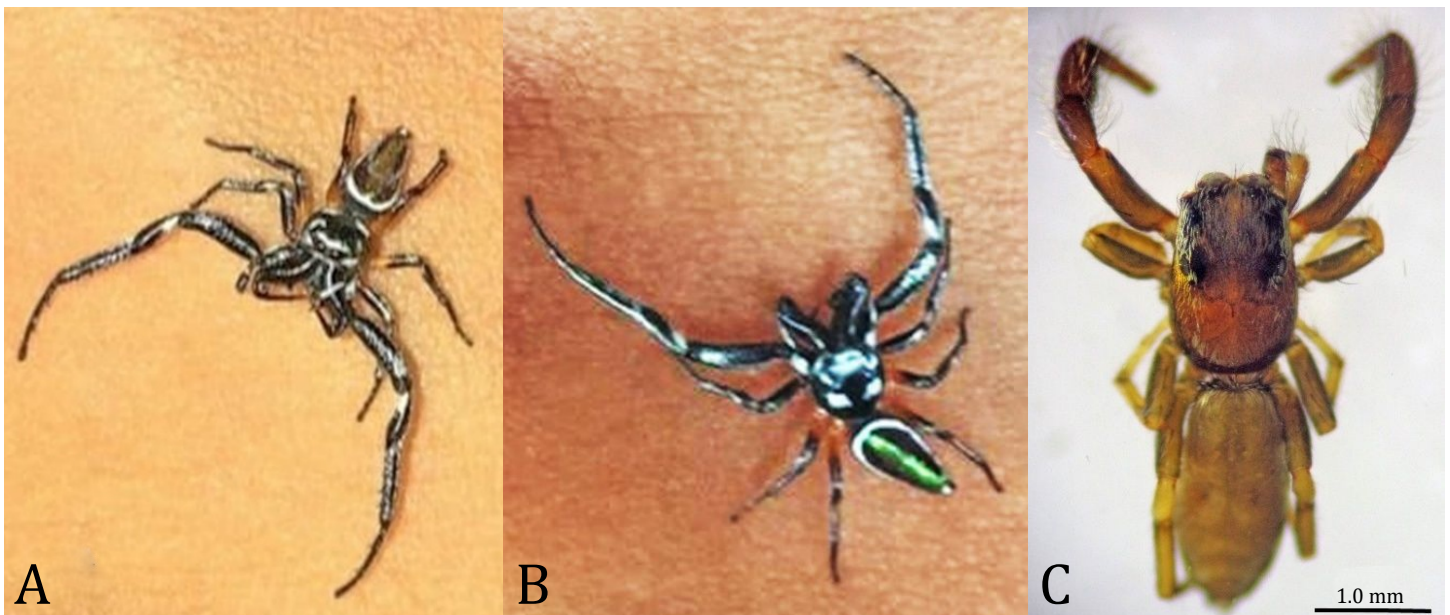


Figure 3. A-B, Two views of a living male *Lurio solennis*. C, Habitus, dorsal view, male *Helvetia albovittata*.

Material examined. 1♂ [Figure 3A-B], Colombia, Córdoba, Sahagun: La Ye [8°49'16.0"N, 75°30'01.3"W], [145m], 8 Sep 2020, Urban Zone, Collected by hand, S. Lopez-Villada coll. (LEUC; OARA-201). Type material deposited in the ZMB not examined.

Diagnosis. For diagnosis and further taxonomic information, see WSC (2021) and Metzner (2021).

Distribution. Brazil, Colombia, Ecuador, French Guiana, Guyana, Trinidad, Venezuela.

Salticinae: Saltafresia: Chrysillini: *Helvetia* Peckham & Peckham 1894
Type species *Helvetia santarema* Peckham & Peckham 1894

5. *Helvetia albovittata* Simon 1901, Figure 3C

Helvetia albovittata Simon 1901; *Admestina insularis* Banks 1902; *H. albovittata* Galiano 1963; *H. otiosa* Galiano 1976; *H. insularis* Galiano 1989; *H. albovittata* Ruiz & Brescovit 2008.

Material examined. 1♂ [Figure 3C], Colombia, Córdoba, Tierralta: TuisTuis, [8°2'2.881"N, 76°5'29.993"W], [178m], 3 Dec 2014, humid forest, manual collection, E. Bedoya–Roqueme leg. (LEUC; OARA-096). Type material in the MACN, MNHN not examined.

Diagnosis. According to Ruiz & Brescovit (2008), the male *H. albovittata* (Figure 3C) is easily distinguished from other *Helvetia* species by the very long embolus, the form of the RTA and the presence of a depression on the retrolateral cymbium where the tip of the embolus is held in resting position (see Bedoya-Roqueme et al. 2018, figs. 6-11).

Natural history. The habitats of this species appear to be very diverse. The specimens of *H. albovittata* from Colombia have been found in mangrove forests and humid forests. Here we report a male from humid forest.

Distribution. Argentina, Brazil, Colombia, Galapagos Islands, Netherlands Antilles, Paraguay.

Salticinae: Saltafresia: Freyina: *Eustiromastix* Simon 1902
Type species: *Eustiromastix obscurus* (Peckham & Peckham 1893)

6. *Eustiromastix spinipes* (Taczanowski 1871), Figures 4-5

Attus spinipes Taczanowski 1871; *Amycus spinipes* Petrunkevitch 1911; *Freya guianensis* Caporiacco 1947; *Capidava spinipes* Mello-Leitão 1948; *Freya guianensis* Caporiacco 1948, 1955; *Chira spinipes* Galiano 1968b; *Chira spinipes* Ruiz & Brescovit 2008; *Eustiromastix spinipes* Edwards 2015.

Material examined. 1♀ [Figures 4-5], Colombia, Córdoba, Tierralta: TuisTuis. This locality can be associated with approximate coordinates of [8°2'2.881"N, 76°5'29.993"W], [258m], 3 Dec 2014, humid forest, manual collection, E. Bedoya–Roqueme leg. (LEUC; OARA-092). Type material deposited in the MZUF not examined.

Diagnosis. According to Galiano (1968) and Edwards (2015), females of *Eustiromastix* can be easily differentiated by presenting widely separated COs and elongated CDs that rotate in a spiral before entering the spermatheca (Figures 4E, 5A and as described by Edwards 2015, fig. 11E). The males have an extremely long, whip-shaped embolus, thin and longer than the TDD, the TBD is tilted to the prolateral side (see Edwards 2015, figs. 11H-L). Additionally, in the female *E. spinipes*, the anterior face of the chelicerae is quite convex, with a tooth in the retromargin (see Galiano 1968, fig. 14).

Short description. This female, collected in the humid forest area, Tierralta (Colombia), is very similar to the descriptions of Galiano (1968) and Edwards (2015): medium-sized spiders, brownish-yellow cephalothorax (Figure 4A), with pale submarginal bands ending in the paramedial location along the posterior edge of the carapace, and a wider pale thoracic stripe beginning behind the ELPs (Figure 4A), female chelicerae shorts, the anterior face of each paturon is quite convex, with a tooth in the retromargin (Figure 4B). Abdomen brown laterally with few small pale markings laterally, broad median tan stripe of variable width with small scattered symmetrical brown marks within the stripe (see Edwards 2015, fig. 11A). Female epigyne generally with widely separated copulatory openings (Figures 4C-D, 5B), and distinctive, elongated copulatory ducts that spiral several times before entering the spermathecae (Figures 4E, 5A). Leg segments ringed with brown distally.

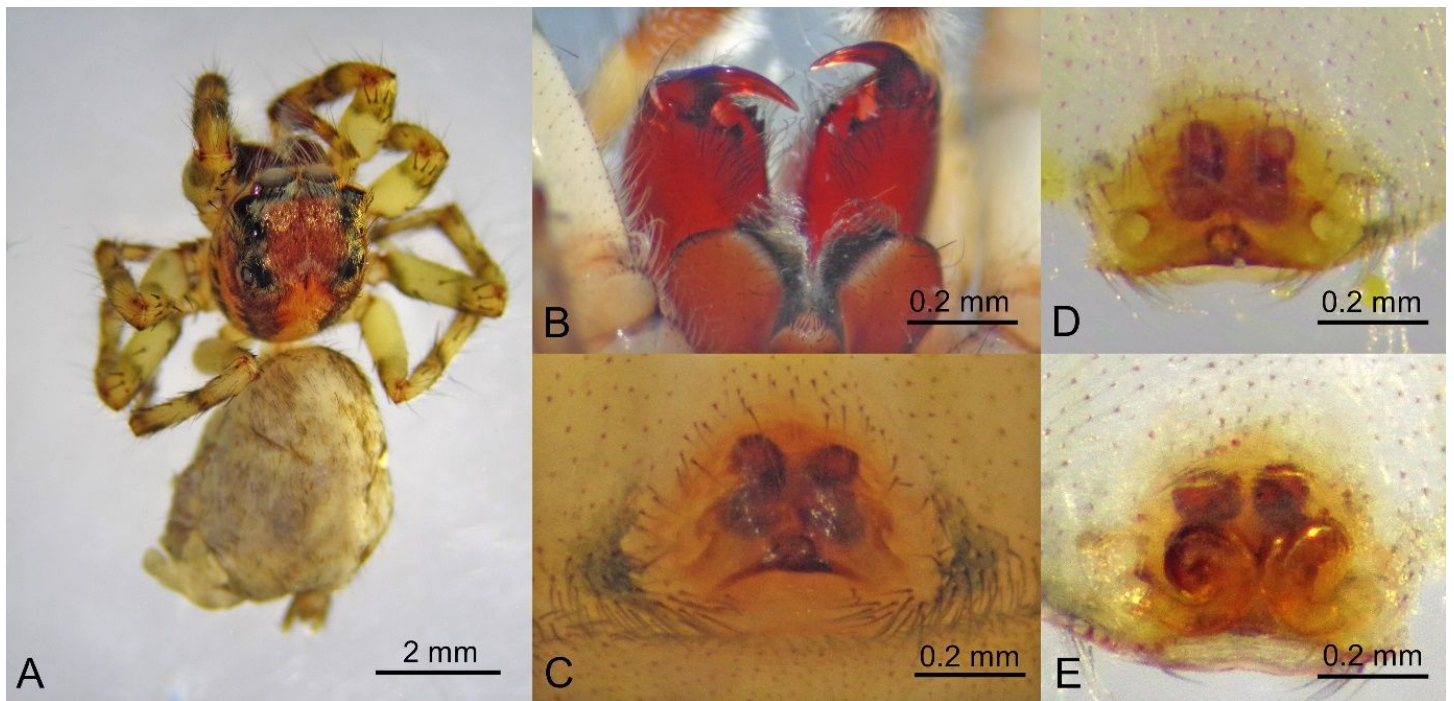


Figure 4. Female *Eustiromastix spinipes*. **A**, Habitus, dorsal view. **B**, Chelicerae, posterior aspect. **C-E**, Epigyne, (C) ventral view, (D), same, cleared, (E) dorsal view, cleared.

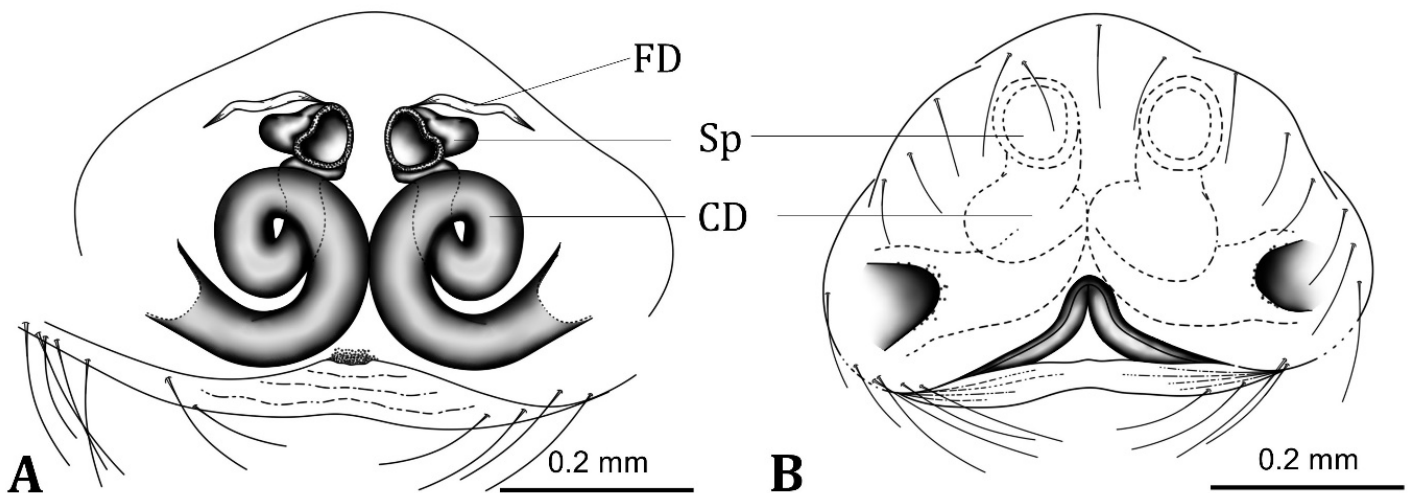


Figure 5. Female *Eustiromastix spinipes* (Taczanowski, 1872). **A**, Epigyne, dorsal view. **B**, Epigyne, ventral view. CD= copulatory duct; FD= fertilization duct; Sp= Spermatheca.

Measurements (specimen from Colombia). One female: TL= 9.17; CL= 3.71; CW= 3.53; AL= 5.34; AERW= 2.96; PERW= 2.83; LOQ= 2.04; PME=0.34-0.36; eyes of the second row separated from the ALE by 0.69 mm and from the PLE by 0.66 mm.

Natural history. In general, specimens of *Eusteromastix spinipes* can be commonly found on the ground and on low vegetation in fields and open forests. According to Edwards (2015) they can also be found in shrubs in open areas and low branches along the edges of the forest, and occasionally in the canopy. In Colombia, specimens of *E. spinipes* were collected in low shrub vegetation in tropical humid forest at an elevation of 258 meters above sea level.

Distribution. Brazil, French Guiana, Guyana, Peru, Tobago, Trinidad, Venezuela.

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

7. *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 albobittata* Schenkel 1953; *Euophrys ambigua* Roewer 1955; *Freya perelegans* Galiano 1963; Ruiz & Brescovit 2007; *Freya ambigua* Edwards & Ruiz 2013; *Leptofreya ambigua* Edwards 2015.

Material examined. 2♀, Colombia, Córdoba, Tierralta: TuisTuis. This locality can be associated with approximate coordinates of [8°2'2.881"N, 76°5'29.993"W], [178m], 3 Dec 2014, humid forest, manual collection, E. Bedoya–Roqueme leg. (LEUC; OARA-206). Type material deposited in the ZMB, NMB not examined.

Diagnosis. For diagnosis and further taxonomic information, see Edwards (2015), WSC (2021) and Metzner (2021).

Distribution. Brazil, Colombia, Guatemala, Guyana, Suriname, Tobago, Trinidad, USA (introduced), and Venezuela.

Salticinae: Saltafresia: Freyina: *Pachomius* Peckham & Peckham 1896
Type species: *Pachomius dybowski* (Taczanowski 1872)

8. *Pachomius dybowski* (Taczanowski 1872), Figure 6

Material examined. 1♂ [Figure 6], Colombia, Córdoba, San Antero: Caño Mocho [9°24'53.3"N, 75°48'07.8"W], [2m] 23 Apr 2018, estuary, mangrove forest, *Rhizophora mangle* L. tree, shaking foliage, E. Bedoya–Roqueme coll. (LEUC; OARA-087). Type material deposited in the NMB, MIZ, MZUF not examined.

Diagnosis. According to Edwards (2015) males of *P. dybowski* (Figure 6A) can be easily identified by the presence of a distinctive femoral organ on the distal prolateral femur of the pedipalp (Figure 6B), and a variably developed but mostly membranous, lobe-like to sclerotized spike-like lateral subterminal apophysis near the embolus, usually containing spicules (Figure 6C).

Measurements (specimens from Colombia). One male: TL= 5.27; CL= 2.24; CW= 2.78; AL= 2.85; AERW= 2.20; PERW= 2.23; LOQ= 2.24; PMP=0.26; eyes of the second row separated from the ALE by 0.31 mm and from the PLE by 0.34 mm.

Natural history. According to Edwards (2015), specimens of *P. dybowskii* are frequently found in altered low vegetation, secondary growth, and along the forest margin. Some species of the genus are generalist ant imitators. Here we report this species in association with the *Rhizophora mangle* L. tree in mangrove forests in the estuarine zone.

Distribution. Brazil, Colombia, Ecuador, French Guiana, Grenada, Guatemala, Guyana, Mexico, Panama, Trinidad, Venezuela.

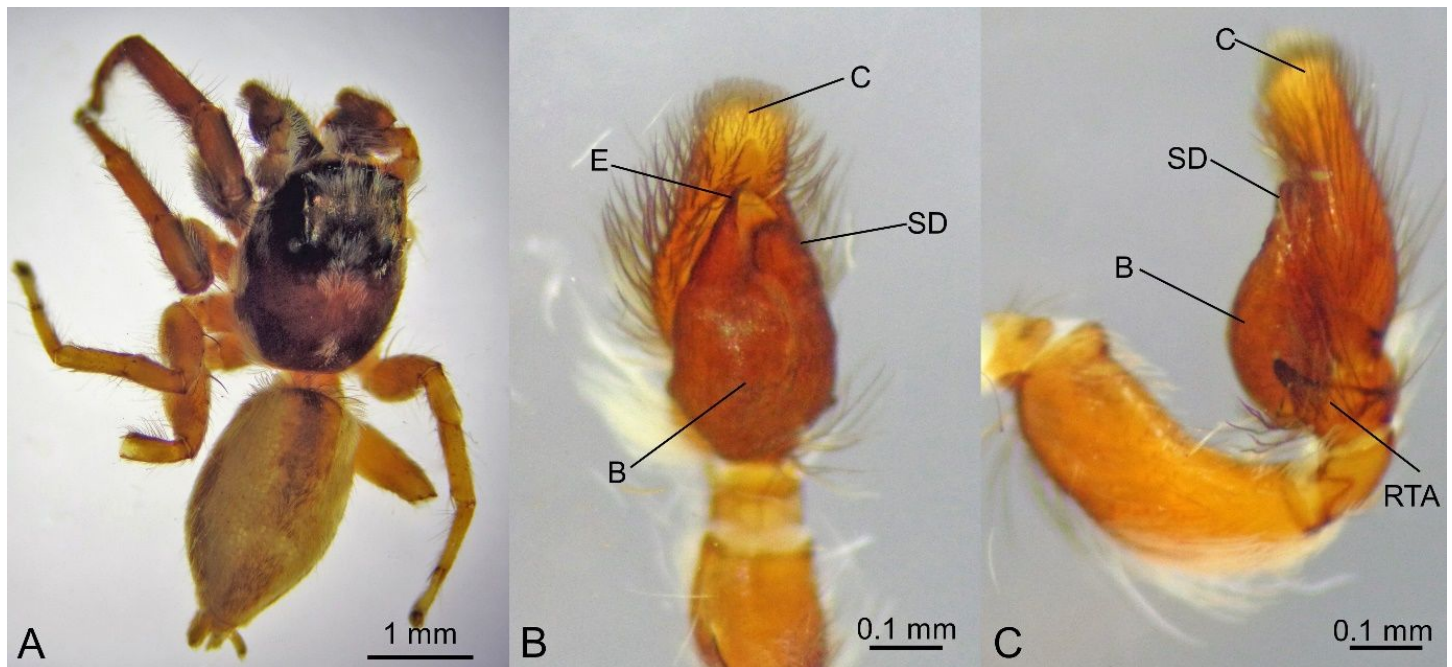


Figure 6. Male *Pachomius dybowskii*. A, habitus, dorsal view. B-C, Left pedipalp, ventral (B) and retrolateral (C) views.

Salticinae: Saltafresia: Freyina: *Xanthofreya* Edwards 2015
Type species: *Xanthofreya rustica* (Peckham & Peckham 1896)

9. *Xanthofreya albosignata* (F. O. Pickard-Cambridge 1901), Figure 7

Cyrene albosignata F. O. Pickard-Cambridge 1901; *Freya albosignata* Petrunkevitch 1911; *Freya demarcata* Chamberlin & Ivie 1936; *Xanthofreya albosignata* Edwards 2015

Material examined. 1♂ [Figure 7], Colombia, Córdoba, Tierralta: TuisTuis. This locality can be associated with approximate coordinates of [8°2'2.881"N, 76°5'29.993"W], [178m], 3 Dec 2014, humid forest, manual collection, E. Bedoya-Roque leg. (LEUC; OARA-090). Type material deposited in the MCZ, FDACS not examined.

Diagnosis. According to Edwards (2015) and Martinez (2017), males of *X. albosignata* (Figure 7A) can be identified by the presence of a flat embolus (Figure 7B), broad, and largely membranous on the edges, and a flattened proateral ramus associated with the embolus tip (Figure 7C-D).

Measurements (specimens from Colombia). One male: TL= 6.32; CL= 2.93; CW= 2.21; AL= 2.74; AERW= 2.26; PERW= 2.21; LOQ= 2.26; PMEPE=0.36; eyes of the second row separated from the ALE by 0.35 mm and from the PLE by 0.42 mm.

Natural history. In Colombia Two species of *Xanthofreya* are known which, according to Martinez (2017), were collected in a tropical low-dry ecosystem and in a fragment of secondary forest (average relative humidity of 83.5%). Here we record *X. albosignata* in the humid tropical forest of the Department of Córdoba, associated with low vegetation and at 178 meters above sea level.

Distribution. Brazil, Colombia, Guatemala, Panama.

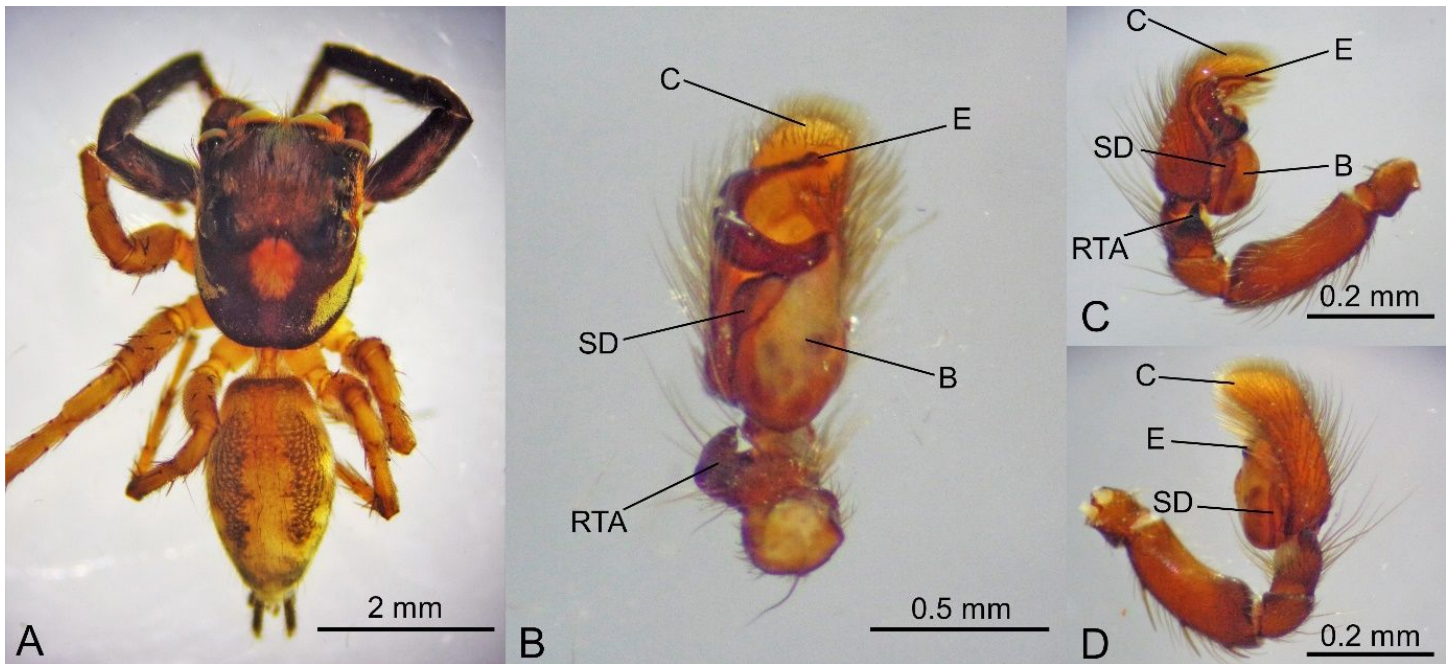


Figure 7. Male *Xanthofreya albosignata*. **A**, habitus, dorsal view. **B-D**, Right pedipalp, ventral (B), retrolateral (C) and prolateral (D) views.

Discussion

With this paper we recognize 28 salticid species of record in the various ecosystems of the Department of Córdoba, Colombia (Appendix 1). The additional species that we present here were primarily found in areas of humid forest in the southern part of that department, including foothills of the western mountain range and framed by the biogeographic regions of Norandina, Chocó, Magdalena and the Pericaribe Barren Belt (Vásquez-V 2005; Palencia-Severiche et al. 2006). Abundance and composition of salticid species are influenced by structural complexity of vegetation (Cumming & Wesolowska 2004; Tews et al. 2004; Rubio et al. 2018). Therefore we expect to find many more salticids in the different areas and habitats that remain to be explored in the Department of Córdoba.

Acknowledgements

We thank Jorge Alexander Quirós Rodríguez M.Sc. and Estefania Padilla Montiel for their collaboration in the Zoology Laboratory of the University of Córdoba, and Samia Lopez Villada, student of Biology, University of Córdoba (Colombia), for the photographs of living specimens. E. Bedoya-Roque me also thanks the agency Coordenação de Aperfeiçoamento de Pessoal de Nível Superior-CAPES for their post-graduation scholarship.

References

- Argañaraz, C. I., G. D. Rubio and R. M. Gleiser. 2017.** Jumping spider (Araneae: Salticidae) diversity in the understory of the Argentinian Atlantic Forest. *Caldasia* 9 (1): 157-168.
- Ballesteros, J. and J. C. Linares. 2015.** Fauna de Córdoba, Colombia. Grupo de investigación Biodiversidad Unicórdoba, Facultad de ciencias Básicas. Montería, Colombia: Fondo Editorial Universidad de Córdoba: 1-324.
- Bedoya-Roque me, E., W. Galvis and L. Martínez. 2017.** First record of the genus *Gypogyna* Simon, 1900 (Araneae: Salticidae: Scopocirini) from Colombia. *Peckhamia* 161.1:1-4.
- Bedoya-Roque me, E. and S. López-Villada. 2020a.** First report of *Colonus pseustes* (Chamberlin & Ivie, 1936) (Araneae: Salticidae: Gophoini) from Colombia. *Peckhamia* 218.1: 1-8.
- Bedoya-Roque me, E. and S. Lopez-Villada. 2020b.** Salticidae (Arachnida: Araneae) from the Department of Córdoba in the Caribbean Region of Colombia. *Peckhamia* 224.1: 1-23.
- Bedoya-Roque me, E., S. Lopez-Villada and M. F. Nadal. 2020.** First record of the genus *Rudra* Peckham & Peckham, 1885 (Araneae: Salticidae: Dendryphantini) from Colombia. *Peckhamia* 215.1:1-5.
- Bedoya-Roque me, E. and M. F. Nadal. 2019.** First records of genus *Metacyrba* F. O. Pickard-Cambridge, 1901 (Araneae: Salticidae: Dendryphantini) from Colombia. *Species* 20: 76-83.
- Bedoya-Roque me, E., M. F. Nadal and G. D. Rubio. 2018.** First record of the genus *Helvetia* Peckham & Peckham, 1894 (Araneae: Salticidae: Chrysillini) from Colombia and extension of its distribution in Argentina. *Peckhamia* 175.1: 1-10.
- Caporiacco, L. di. 1947.** Diagnosi preliminari de specie nuove di aracnidi della Guiana Britannica raccolte dai professori Beccari e Romiti. *Monitore Zoologico Italiano* 56: 20-34.
- Caporiacco, L. di. 1948.** Arachnida of British Guiana collected in 1931 and 1936 by Professors Beccari and Romiti. *Proceedings of the Zoological Society of London* 118 (3): 607-747.
- Caporiacco, L. di. 1955.** Estudios sobre los aracnidos de Venezuela. 2a parte: Araneae. *Acta Biologica Venezuelica* 1: 265-448.
- Chamberlin, R. V. and W. Ivie. 1936.** New spiders from Mexico and Panama. *Bulletin of the University of Utah* 27 (5): 1-103.
- Chickering, A. M. 1946.** The Salticidae of Panama. *Bulletin of the Museum of Comparative Zoology* 97: 1-474.
- Costa, E. L. S. and G. R. S. Ruiz. 2014.** Taxonomic revision of *Scopocira* Simon, 1900 (Araneae: Salticidae). *Zootaxa* 3893 (2): 151-195.
- Crane, J. 1945.** Spiders of the family Salticidae from British Guiana and Venezuela. *Zoologica, New York* 30: 33-42.
- Cumming, M. S. and W. Wesolowska. 2004.** Habitat separation in a species-rich assemblage of jumping spiders (Araneae: Salticidae) in a suburban study site in Zimbabwe. *Journal of Zoology* 262: 1-10.
- Edwards, G. B. 2015.** Freyinae, a major new subfamily of Neotropical jumping spiders (Araneae: Salticidae). *Zootaxa* 4036 (1): 1-87.
- Edwards, G. B. and G. R. S. Ruiz. 2013.** *Freya ambigua* (Araneae: Salticidae) introduced to the continental United States, with new synonyms. *Journal of Arachnology* 41: 11-17.
- Galiano, M. E. 1963.** Las especies americanas de arañas de la familia Salticidae descritas por Eugène Simon: Redescripciones basadas en los ejemplares típicos. *Physis, Revista de la Sociedad Argentina de Ciencias Naturales (C)* 23: 273-470.
- Galiano, M. E. 1968.** Adiciones a la revision del género *Chira* Peckham, 1896 (Araneae, Salticidae). *Physis, Revista de la Sociedad Argentina de Ciencias Naturales (C)* 27: 349-366.
- Galvis, W. and V. Muñoz-Charry. 2017.** First record of the genus *Tanybelus* (Salticidae: Salticinae: Sarindini) from Colombia. *Caldasia* 39 (2): 400-405.
- Koch, C. L. 1846.** Die Arachniden. J. L. Lotzbeck, Nürnberg, Dreizehnter Band: 1-234, pl. 433-468, figs.1078-1271; Vierzehnter Band: 1-88, pl. 467-480, figs. 1272-1342.
- Koch, C. L. 1850.** Übersicht des Arachnidensystems. J. L. Lotzbeck, Nürnberg. Heft 5: 1-77.
- Maddison, W. P. 2015.** A phylogenetic classification of jumping spiders (Araneae: Salticidae). *Journal of Arachnology* 43: 231-292.
- Maddison, W. P. and T. Szüts. 2019.** Myrmarachnine jumping spiders of the new subtribe Levieina from Papua New Guinea (Araneae, Salticidae, Myrmarachnini). *ZooKeys* 842: 85-112.

- Maddison, W. P., D. R. Maddison, S. Derkarabetian and M. Hedin. 2020.** Sitticine jumping spiders: phylogeny, classification, and chromosomes (Araneae, Salticidae, Sitticini). *ZooKeys* 925: 1-54.
- Martínez, L. 2017.** New records of the genus *Xanthofreya* Edwards from Colombia (Salticidae: Freyina). *Peckhamia* 155.1: 1-6.
- Mello-Leitão, C. F. de. 1948.** Contribuição ao conhecimento da fauna araneológica das Guianas. *Anais da Academia Brasileira de Ciências* 20: 151-196.
- Metzner, H. 2020.** Jumping spiders (Arachnida: Araneae: Salticidae) of the world, *online at* <https://www.jumping-spiders.com>, accessed 02 Jun 2021.
- Palencia-Severiche, G., T. Mercado-Fernández and E. Combatt-Caballero. 2006.** Estudio agroclimático del departamento de Córdoba. Montería, Colombia, Universidad de Córdoba.
- Peckham, G.W. and E. G. Peckham. 1894.** Spiders of the *Marptusa* group. *Occasional Papers of the Natural History Society of Wisconsin* 2: 85-156.
- Peckham, G. W. and E. G. Peckham. 1896.** Spiders of the family Attidae from Central America and Mexico. *Occasional Papers of the Natural History Society of Wisconsin* 3: 1-101.
- Petrunkévitch, A. 1911.** A synonymic index-catalogue of spiders of North, Central and South America with all adjacent islands, Greenland, Bermuda, West Indies, Terra del Fuego, Galapagos, etc. *Bulletin of the American Museum of Natural History* 29: 1-791.
- Pickard-Cambridge, F. O. 1901.** Arachnida - Araneida and Opiliones. In: *Biologia Centrali-Americana, Zoology*. London 2:193-312.
- Prószyński, J. 2017.** Pragmatic classification of the world's Salticidae (Araneae). *Ecologica Montenegrina* 12: 1-133.
- Racero-Casarrubia, J., J. Ballesteros-Correa and J. Pérez-Torres. 2015.** Mamíferos del departamento de Córdoba-Colombia: historia y estado de conservación. *Biota Colombiana*, 16 (2): 128-148.
- Roewer, C. F. 1955.** Katalog der Araneae von 1758 bis 1940, bzw. 1954. 2. Band, Abt. a (Lycosaeformia, Dionycha [excl. Salticiformia]). 2. Band, Abt. b (Salticiformia, Cribellata) (Synonyma-Verzeichnis, Gesamtindex). Institut royal des Sciences naturelles de Belgique, Bruxelles: 1-1751.
- Rubio, G. D., J. E. Baigorria and C. L. Scioscia. 2018.** Arañas salticidas de Misiones. Guía para la identificación (tribus basales). Primera Edición. Ciudad Autónoma de Buenos Aires, Universidad Maimónides, Ediciones Fundación Azara, Vazquez Mazzini Editores: 1-206.
- Ruiz, G. R. S. and A. D. Brescovit. 2007.** On the Venezuelan species of jumping spider described by Schenkel (Araneae, Salticidae). *Journal of Arachnology* 34: 646-648.
- Ruiz, G. R. S. and A. D. Brescovit. 2008.** Redescription and resolution of some Neotropical species of jumping spiders described by Caporiacco and description of a new species (Araneae: Salticidae). *Revista Brasileira de Zoologia* 25 (3): 487-494.
- Ruiz, G. R. S. and A. D. Brescovit. 2013.** Revision of *Breda* and proposal of a new genus (Araneae: Salticidae). *Zootaxa* 3664: 401-433.
- Schenkel, E. 1953.** Bericht über einige Spinnentiere aus Venezuela. *Verhandlungen der Naturforschenden Gesellschaft in Basel* 64: 1-57.
- Simon, E. 1901.** Histoire naturelle des araignées. Deuxième édition, tome second. Roret, Paris. 381-668.
- Simon, E. 1902a.** Description d'araignées nouveaux de la famille des Salticidae (Attidae) (suite). *Annales de la Société Entomologique de Belgique* 46: 24-56, 363-406.
- Simon, E. 1902b.** Etudes arachnologiques. 32e Mémoire. LI. Descriptions d'espèces nouvelles de la famille des Salticidae (suite). *Annales de la Société Entomologique de France* 71: 389-421.
- Taczanowski, L. 1871.** Les aranéides de la Guyane française. *Horae Societatis Entomologicae Rossicae* 8: 32-132.
- Tews, J., U. Brose, V. Grimm, K. Tielbölger, M. C. Wichmann, M. Schwager and F. Jeltsch. 2004.** Animal species diversity driven by habitat heterogeneity/diversity: the importance of keystone structures. *Journal of Biogeography* 31: 79-92.
- Vásquez-V., V. H. 2005.** Reservas Forestales Protectoras Nacionales de Colombia, Atlas Básico. Bogotá, Colombia: Conservación Internacional Colombia, Ministerio de Ambiente, Vivienda y Desarrollo Territorial, Embajada Real de los Países Bajos: 1-127.
- WSC. 2021.** World Spider Catalog. Natural History Museum Bern, *online at* <http://wsc.nmbe.ch>, version 22.0, accessed 2 Jun 2021. doi: 10.24436/2

Appendix 1

Jumping spider species reported from the Department of Córdoba, Colombian Caribbean

References for records are listed above, in the reference section

clade	species	sex	environment	subregion	reference
Lyssomaninae	<i>Lyssomanes unicolor</i> (Taczanowski 1871)	♂	mangrove forest	Coastal	Bedoya-Roqueume & Lopez-Villada 2020b
Amycoidea: Amycini	<i>Acragas peckhami</i> (Chickering 1946)	♂	urban zone	Sinú Medio	Bedoya-Roqueume & Lopez-Villada 2020b
Amycoidea: Bredini	<i>Breda lubomirskii</i> (Taczanowski 1878)	♀	humid forest	Alto Sinú	this study
Amycoidea: Gophoini	<i>Colonus pallidus</i> (C. L. Koch 1846)	♀	mangrove forest, swamp, urban zone	Coastal, Sinú Medio	Bedoya-Roqueume & Lopez-Villada 2020a
Amycoidea: Gophoini	<i>Colonus pseustes</i> (Chamberlin & Ivie 1936)	♂	urban zone	Sinú Medio	Bedoya-Roqueume & Lopez-Villada 2020a
Amycoidea: Sarindini	<i>Tanybelus aeneiceps</i> Simon 1902	♂	humid forest	Alto Sinú	this study
Amycoidea: Scopocirini	<i>Gypogyna forceps</i> Simon 1900	♂	urban zone	Sinú Medio	Bedoya-Roqueume, Galvis & Martínez 2017
Amycoidea: Scopocirini	<i>Scopocira denticheles</i> Simon 1900	♂	humid forest, urban zone	Alto Sinú, Sinú Medio	Bedoya-Roqueume & Lopez-Villada 2020b, this study
Amycoidea: Sitticini	<i>Jollas geniculatus</i> Simon 1901	♀	swamp	Bajo Sinú	Bedoya-Roqueume & Lopez-Villada 2020b
Amycoidea: Sitticini	<i>Jollas pompatus</i> (Peckham & Peckham, 1894)	♀	swamp	Bajo Sinú	Bedoya-Roqueume & Lopez-Villada 2020b
Amycoidea: Thiodinini	<i>Titanattus cretatus</i> Chickering 1946	♀	mangrove forest	Coastal	Bedoya-Roqueume & Lopez-Villada 2020b
Marpissoida: Dendryphantina	<i>Bryantella smaragda</i> (Crane 1945)	♀	swamp	Bajo Sinú	Bedoya-Roqueume & Lopez-Villada 2020b
Marpissoida: Dendryphantina	<i>Gastromicans levispina</i> (F. O. Pickard-Cambridge 1901)	♂♀	mangrove forest	Coastal	Bedoya-Roqueume & Lopez-Villada 2020b
Marpissoida: Dendryphantina	<i>Lurio solennis</i> (C. L. Koch 1846)	♂	savanna	Bajo Sinú	this study
Marpissoida: Dendryphantina	<i>Rudra geniculata</i> Peckham & Peckham 1885	♀	urban zone	Sinú Medio	Bedoya-Roqueume, Lopez-Villada & Nadal 2020
Marpissoida: Marpissina	<i>Metacyrba punctata</i> (Peckham & Peckham 1894)	♀	humid forest	Alto Sinú	Bedoya-Roqueume & Nadal 2019
Marpissoida: Marpissina	<i>Metacyrba venusta</i> (Chickering 1946)	♀	humid forest, mangrove forest	Alto Sinú, Coastal	Bedoya-Roqueume & Nadal 2019
Saltafresia: Chrysillini	<i>Helvetia albovittata</i> Simon 1901	♂	humid forest	Alto Sinú	Bedoya-Roqueume, Nadal & Rubio 2018, this study
Saltafresia: Euophryini	<i>Anasaitis canalis</i> (Chamberlin 1925)	♀	mangrove forest	Coastal	Bedoya-Roqueume & Lopez-Villada 2020b
Saltafresia: Euophryini	<i>Corythalia brevispina</i> (F. O. Pickard-Cambridge 1901)	♂	mangrove forest	Coastal	Bedoya-Roqueume & Lopez-Villada 2020b
Saltafresia: Euophryini	<i>Corythalia dakryoides</i> Bayer 2020	♀	mangrove forest	Coastal	Bedoya-Roqueume & Lopez-Villada 2020b
Saltafresia: Euophryini	<i>Corythalia spiralis</i> (F. O. Pickard-Cambridge 1901)	♀	mangrove forest	Coastal	Bedoya-Roqueume & Lopez-Villada 2020b
Saltafresia: Freyina	<i>Eustiromastix spinipes</i> (Taczanowski, 1871)	♀	humid forest	Alto Sinú	this study
Saltafresia: Freyina	<i>Frigga crocuta</i> (Taczanowski 1878)	♀	swamp	Bajo Sinú	Bedoya-Roqueume & Lopez-Villada 2020b
Saltafresia: Freyina	<i>Frigga pratensis</i> (Peckham & Peckham 1885)	♂♀	swamp	Bajo Sinú	Bedoya-Roqueume & Lopez-Villada 2020b
Saltafresia: Freyina	<i>Leptofreya ambigua</i> (C. L. Koch 1846)	♂♀	humid forest, mangrove forest, swamp, urban zone, dry zone	Alto Sinú, Bajo Sinú, Coastal, Sinú Medio, Savanna	Bedoya-Roqueume & Lopez-Villada 2020b, this study
Saltafresia: Freyina	<i>Pachomius dybowski</i> (Taczanowski, 1872)	♂	mangrove forest	Coastal	this study
Saltafresia: Freyina	<i>Xanthofreya albosignata</i> (F. O. Pickard-Cambridge, 1901)	♂	humid forest	Alto Sinú	this study