

## A new jumping spider species of the genus *Maeota* (Araneae: Salticidae: Euophryini), with new faunistic data of the tribe from Colombia

Una nueva especie de araña saltarina del género *Maeota* (Araneae: Salticidae: Euophryini), con nuevos datos faunísticos de la tribu para Colombia

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### ABSTRACT

A new species of jumping spider of the genus *Maeota* (Salticidae), *M. galeanae* sp. nov., is described and illustrated from the Caribbean state of Magdalena, Colombia. Additionally, the genus *Anasaitis* is recorded for the first time from Colombia, with the species *A. canalis*, from the department of Chocó. Moreover, new records are presented for *Maeota serrapophysis* from the departments of Magdalena, Quindío and Valle del Cauca, Colombia, with individuals from the southern region presenting a slightly different pattern of coloration in which the prosoma, abdomen and legs have a reticulated brown and gray pattern. New faunistic data from Colombia are also presented for the species *M. betancuri* and *Ilargus galianoae*. Finally, a distribution map is presented, including new and previously published records for the taxa treated here.

**Key Words.** Salticids, South America, Caribbean, Andes.

### RESUMEN

Una nueva especie de araña saltarina del género *Maeota* (Salticidae), *M. galeanae* sp. nov. es descrita e ilustrada del departamento caribeño del Magdalena, Colombia. Adicionalmente, el género *Anasaitis* es reportado por primera vez para el país, con la especie *A. canalis*, del departamento del Chocó. Además, se presentan nuevos reportes para el país de *Maeota serrapophysis*, en los departamentos de Magdalena, Quindío y Valle del Cauca, con los individuos de la región sur presentando un patrón de coloración ligeramente diferente, conformado por un prosoma, abdomen y patas con un patrón reticulado marrón con gris. De la misma forma, nuevos datos faunísticos en el país se presentan para *M. betancuri* e *Ilargus galianoae*. Finalmente, se incluye un mapa de distribución con estos nuevos datos y aquellos previamente publicados para los taxones aquí tratados.

**Palabras clave.** Salticidos, Sudamérica, Caribe, Andes.

### INTRODUCTION

Globally distributed, jumping spiders (Salticidae) make up the most genera-rich and species-rich family of the order Araneae, and even one of the most diverse

groups of the subphylum Chelicerata, with 618 genera and more than 5900 of the Earth's > 46000 known species of spiders (Prószyński 2016, World Spider Catalog 2016). Recently, salticids has been part of important studies in its

taxonomy, phylogenetics, biogeography and evolution, which has permitted understand its evolutionary patterns, classification and actual distribution, in the New and Old World (Maddison 2015). In the latter paper, the author established a phylogenetic classification of the genera included in the family, and a division based both in morphological and molecular data, with seven subfamilies, 30 tribes, and 13 subtribes. Of these tribes, the Euophyrini represents the largest group in jumping spiders, in both Old and New World, with 116 genera and more than 1080 species (Maddison 2015, Zhang & Maddison 2015). The genera below mentioned belong to this tribe of jumping spiders (Maddison 2015).

The genus *Maeota* Simon, 1901 currently includes nine described species and is distributed in the Neotropical region, from Mexico to Venezuela and Brazil (World Spider Catalog 2016). Zhang & Maddison (2012a, 2015) provided the latest revision of the group, giving systematic comments of the genus, and transferring *Pensacola tuberculotibiata* Caporiacco, 1955 to the group. In addition, the authors described three new species, one of which (*M. simoni* Zhang & Maddison, 2012) was recently synonymized with the Panamanian *Maeota serrapophysis* (Chamberlin & Ivie, 1936) by Cheng *et al.* (2015). Additionally, three new species were described by Galvis (2014, 2015) from Colombia, and one more by Garcilazo-Cruz & Álvarez-Padilla (2015) from Mexico.

In the same form, the genus *Ilargus* Simon, 1901 includes ten accepted species distributed in Colombia, Venezuela, Ecuador and Brazil (Galiano 1980, Braul *et al.* 1997, Edwards *et al.* 2005, Galvis 2015, World Spider Catalog 2016), whose males can be recognized by their large palpal bulbs, with large proximal tegular lobes, embolus long

with a wide spiral, and usually finger-like RTA (retrolateral tibial apophysis); while females can be recognized by their large epigynal windows, with a median septum, with short to long copulatory ducts (Zhang & Maddison 2015). The genus *Anasaitis* Bryant, 1950 includes 21 accepted species distributed mainly in the Greater Antilles, with only two species inhabiting continental lands: *A. canalis* (Chamberlin, 1925) from Panamá and *A. canosa* (Walckenaer, 1837) from United States and Cuba (Bryant 1950, Edwards 1999, Zhang & Maddison 2012b, 2015, World Spider Catalog 2016). Males of the latter genus can be recognized by their usually short embolus, with a proximal tegular lobe, distal hematodocha highly reduced, and finger-like RTA; and females by their epigynum without distinct window, and copulatory ducts usually short (Zhang & Maddison 2015).

The vast majority of known species, about 80%, are invertebrates, and worldwide conservation efforts have mostly relied on a few emblematic groups, being largely driven by substantial confidence in the umbrella species concept (Cardoso *et al.* 2011a, b). For this is important to point out that the current known distribution and number of New World jumping spiders is still poorly known and is probably overwhelming greater, considering the fact that only about 27% of the total species of spiders may be known (Coddington & Levi 1991). In this sense, faunistic and taxonomic studies on Neotropical arthropod species are important, both, to improve our knowledge about the biotic richness of one of the most biodiverse regions in the world (Myers *et al.* 2000), as well as to combat two of the most important obstacles to the conservation of invertebrates: the well-known Linnean shortfall, most species are undescribed, and the Wallacean shortfall, the distribution of described species is mostly unknown (Bini *et al.* 2006, Cardoso *et al.* 2011b, Hortal *et al.* 2015).

In this paper *Maeota galeanoae* sp. nov. is described and illustrated from material collected near to the Minca town at the Sierra Nevada de Santa Marta, Magdalena, Colombia. Additionally, new records are presented for the genera *Ilargus* and *Maeota*, along with a new record of the genus *Anasaitis* Bryant, 1950 from the country. Finally, a distribution map with these new and previously published records for the taxa here treated is included.

## MATERIAL AND METHODS

The material examined is deposited in the Arachnological Collection of the Instituto de Ciencias Naturales of the Universidad Nacional de Colombia (ICN-Ar, current curator: prof. Eduardo Flórez), Bogotá, Colombia; and the Invertebrate Collection of the Universidad de los Andes (ANDESIN, current curator Prof. Emilio Realpe), Bogotá, Colombia. The multifocal photographs of the genitalia of all species were taken with a Leica MC-170 HD digital camera attached to a Leica M205A stereomicroscope, and then united by the image stacking software Leica Application Suite version 4.6.0. The general format of descriptions follows Galvis (2015). The photographs of the remaining material in laboratory and measurements were taken with an AmScope MU300 digital camera, attached to an Advanced Optics JSZ-6 stereomicroscope. The photographs of the live specimens were taken with a Nikon D7100 camera, with a Nikkor 105 mm f/2,8 macro lens and a Raynox DCR-250 Super Macro lens attached to the macro lens. Platnick & Shadab (1975) was used, with minor modifications, as model for describing leg macrosetae. For visualization of female genitalia, the epigynal plate was dissected and cleared in 10% KOH. The measurements are in millimeters.

Abbreviations used in the text and figures are: AMNH = American Museum of Natural

History, Central Park, New York, USA; MCZ = Museum of Comparative Zoology, Invertebrate Zoology (Harvard University), Cambridge, USA; OC = ocular quadrangle; QCAZ = Museum of Zoology, Pontificia Universidad Católica, Quito, Ecuador; RTA = retrolateral tibial apophysis; SD = spermathecal duct; TL = proximal tegular lobe; UBC-SEM = Spencer Entomological Collection at the Beaty Biodiversity Museum, University of British Columbia, Vancouver, Canada; VTA = ventral tibial apophysis; cd = copulatory duct; co = copulatory opening; d = dorsal; di = distal; e = embolus; ed = embolic disc; ew = apigynal window; fd = fertilization duct; m = meters above mean sea level; me = medial; p = prolateral; pr = proximal; r = retrolateral; sp = spermathecal; v = ventral. The information in square brackets was added for complementing the label data. Records without coordinates in the label were approximated to locations via the gazetteers GeoLocator (<http://tools.freeside.sk/geolocator/geolocator.html>) and GeoNames (<http://www.geonames.org/>). The distributional map was prepared in the QGIS “Lyon” (version 2.12.2, <http://www.qgis.org/es/site/>).

## RESULTS

**Salticidae Blackwall, 1841**

**Salticinae Blackwall, 1841**

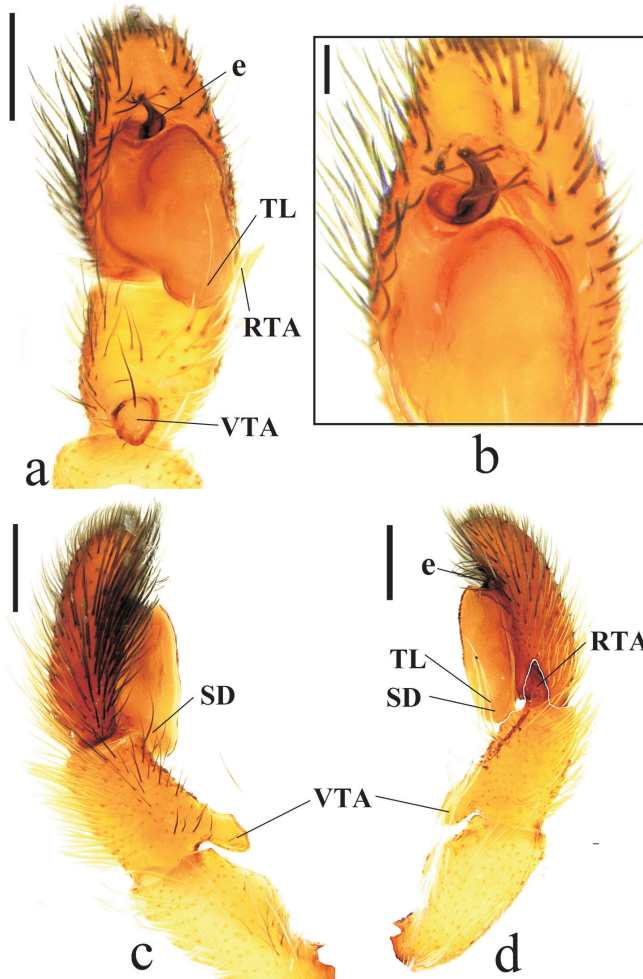
**Euophryini Simon, 1901**

***Maeota* Simon, 1901**

***Maeota galeanoae* sp. nov.**

Figs 1a-d, 2a-d, 6

**Types. Holotype:** male from Colombia, Magdalena, Santa Marta, Corregimiento Minca, Hacienda La Victoria, Sector Jabalí Alto, Quebrada Jabalí, alrededores Cascada (VIC4), 11.119°N, 74.081°W, 1293 m, Jul 2015, *W. Galvis & CARBIO team*, ICN-Ar 8080. **Paratypes:** three females with same data as holotype, ICN-Ar 8081, 8093; one

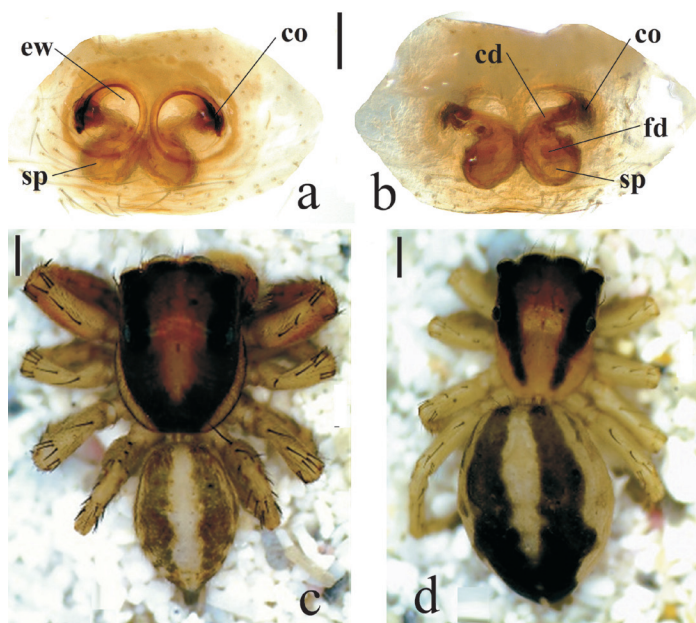


**Figures 1a-d.** *Maeota galeanoae* sp. nov., male holotype (ICN-Ar 8080), a-d) left palp, a) ventral view, b) embolus, detail, c) prolateral view, d) retrolateral view. Scale bar = 0.20 mm (a, c-d); 0.05 mm (b). e = embolus; RTA = retrolateral tibial apophysis; SD = sperm duct; TL = proximal tegular lobe; VTA = ventral tibial apophysis.

female from same municipality as holotype, Hacienda La Victoria, Quebrada Jabalí, Sector Jabalí Alto (VIC5), 11.120°N, 74.082°W, 1323 m, Jul 2015, *W. Galvis & CARBIO team*, ICN-Ar 8092.

**Diagnosis.** Males of *M. galeanoae* sp. nov. can be distinguished from those of the remaining species of the genus, except *M. tuberculotibiata* (Caporiacco, 1955) by the

presence of a VTA. From *M. tuberculotibiata* can be distinguished by their shorter embolus, straight distally, with one lap, and a shorter and pointed VTA, *versus* longer and rounded in that species, and a longer RTA (Figs. 1a-d). Females can be distinguished of those of the remaining species of the genus by their anterior and laterally disposed short copulatory ducts, with anterior oval and smaller spermathecae (Figs. 2a-b).

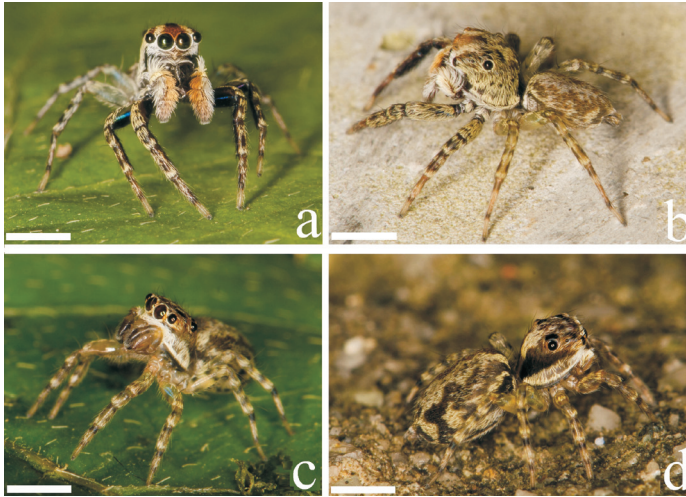


**Figures 2a-d.** *Maeota galeanoae* sp. nov. a-b) female paratype, epigynum (ICN-Ar 8081), a) ventral view, b) dorsal view; c) male holotype, habitus (ICN-Ar 8080); d) female paratype, habitus. Scale bar = 0.10 mm (a-b); 0.50 mm (c-d). co = copulatory opening; cd = copulatory duct; ew = apigynal window; fd = fertilization duct; sp = spermathecae.

**Description. Male (holotype).** Total length: 4.09. Carapace brown with two white lateral stripes and one white mark posterior to the OC, 2.15 long, 1.66 wide, 1.28 high (Fig. 2c). OC brown, 0.99 long. Anterior eye row 1.56 wide and posterior 1.49 wide. Sternum white, 0.88 long, 0.65 wide. Labium dark brown, 0.20 long, 0.30 wide. Endites dark brown. Chelicerae dark brown, with one retromarginal and two promarginal teeth. Palp brown with wide embolus, short and pointed VTA, and lanceolated RTA (Figs. 1a-d). Legs 4312, 1 brown, 2-4 white. Leg macrosetae: femur, I-IV d 2 di, p 1 di, r 1 di; patella, I-IV p 1 me, r 1 me; tibia, I-II v 2-2-2, p 1-1-1, d 1 pr, r 0-1-1; III-IV v 1-0-2, p 1-1-1, d 1 pr, r 1-1-1; metatarsus, I-II v 2-2, p 1-1, r 1-1; III v 2-2, p 1-0-2, r 1-0-2; IV v 1-1, p 1-1-2, r 1-1-2. Abdomen dorsally whitish with two longitudinal brown stripes, ventrally white. Spinnerets brown (Fig. 2c).

**Female. (paratype, ICN-Ar 8081).** Total length 4.99. Carapace light brown with two dark brown longitudinal stripes, 2.04 long, 1.44 wide, 1.21 high (Fig. 2d). OC brown, 0.95 long. Anterior eye row 1.59 wide and posterior 1.52 wide. Sternum white, 0.80 long, 0.62 wide. Labium light brown, 0.18 long, 0.25 wide. Endites light brown. Chelicerae light brown, with one retromarginal and two promarginal teeth. Legs 4312, all white. Leg macrosetae: femur, I d 2 di, p 1 di; II, IV d 2 di, p 1 di, r 1 di; III d 2 di, p 1 di, r 1 di; patella, I p 1 me; II-IV p 1 me, r 1 me; tibia, I v 2-2-2, p 0-1-1, r 1 di; II v 2-2-2, p 0-1-1, d 1 pr, r 1 di; III v 1-0-2, p 0-1-1, d 1 pr, p 0-1-1; IV v 0-1-2, p 1-1-1, d 1 pr, r 1-1-1; metatarsus, I-II v 2-2, p 1-1, r 1-1; III v 2-0-2, p 1-0-2, r 1-0-2; IV v 1-0-1, p 1-1-2, r 1-1-2. Abdomen white with two longitudinal dorsal-wide and two longitudinal lateral-thin brown stripes, ventrally white. Spinnerets brown (Fig. 2d).





**Figures 3a-d.** Living spider photos of *Maeota serrapophysis* (Chamberlin & Ivie, 1936), (ICN-Ar 3399), a-b) male, a) frontal view, b) dorsolateral view; c-d) female, c) frontolateral view, d) dorsolateral view. Scale bar = aprox. 1.00 mm (a-d). Figures a-d are copyright © 2016 J.S. Moreno, released under a Creative Commons Attribution (CC-BY) 3.0 license.

Epigynum (Figs. 2a-b), with anterior and lateral copulatory openings, wide epigynal windows, short copulatory ducts and posterior oval spermathecae with centrally disposed fertilization ducts.

**Variation.** (n=4 females) Total length 3.71-4.99. Carapace length 1.83-2.04.

**Etymology.** The specific epithet is a patronym in honor of Dr. Gloria Amparo Galeano Garcés, who made great contributions in taxonomic studies of plants from Colombia and the Neotropical region, especially in the palm family.

**Distribution and Natural History.** Colombia (Magdalena) (Fig. 6). The material examined was collected beating low shrubs in a preserved wet-mountain forest.

#### New records

*Maeota serrapophysis* (Chamberlin & Ivie, 1936)

Figs 3a-d, 4a-g, 6

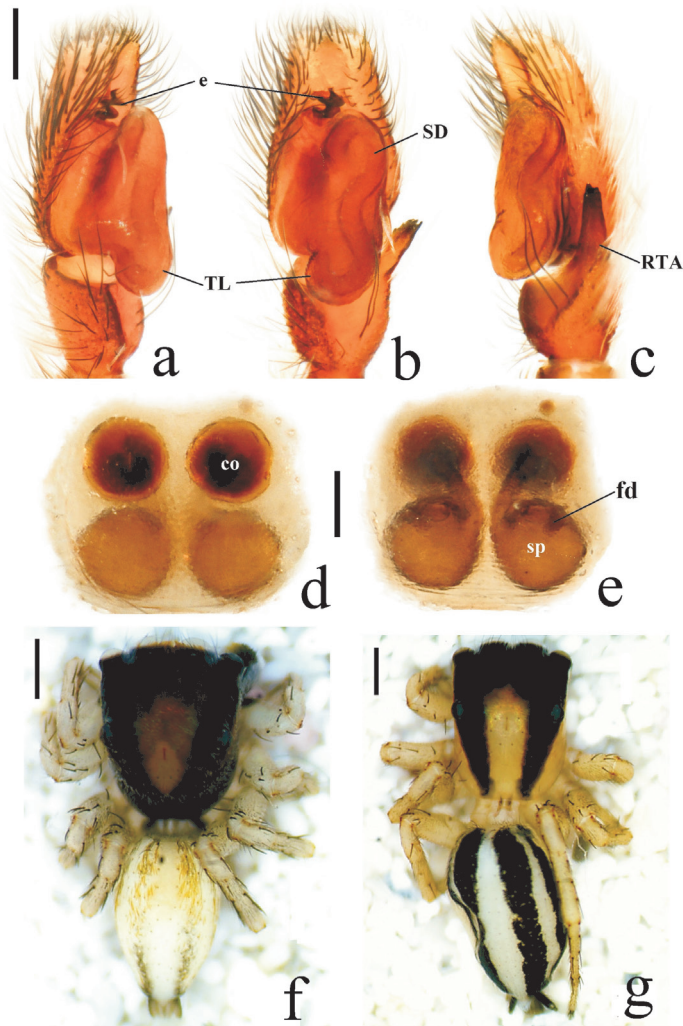
**Note.** For further taxonomic information and diagnosis see Cheng *et al.* (2015: 7), Chickering (1946: 153) and Zhang & Maddison (2012b: 25).

**Material examined.** COLOMBIA, **Magdalena:** 1 male, 1 female, Santa Marta, Minca, Hacienda La Victoria, parte alta Río Gaira, [11.137°N, 74.098°W], [900 m], 28 Jul 2015, *W. Galvis*, ICN-Ar 3381. **Quindío:** 1 male, 3 females, La Tebaida, Valle de Maravelez, Hacienda Maravelez, 4.482°N, 75.813°W, 1239 m 5 Mar 2016, *V. Muñoz-Charry*, ANDESIN 2972. **Valle del Cauca:** 3 males, 1 female, Buga, Parque Natural Regional (PNR) El Vínculo, 3.848°N, 76.787°W, 980 m, 28 Nov 2014, *J.S. Moreno*, ICN-Ar 3399.

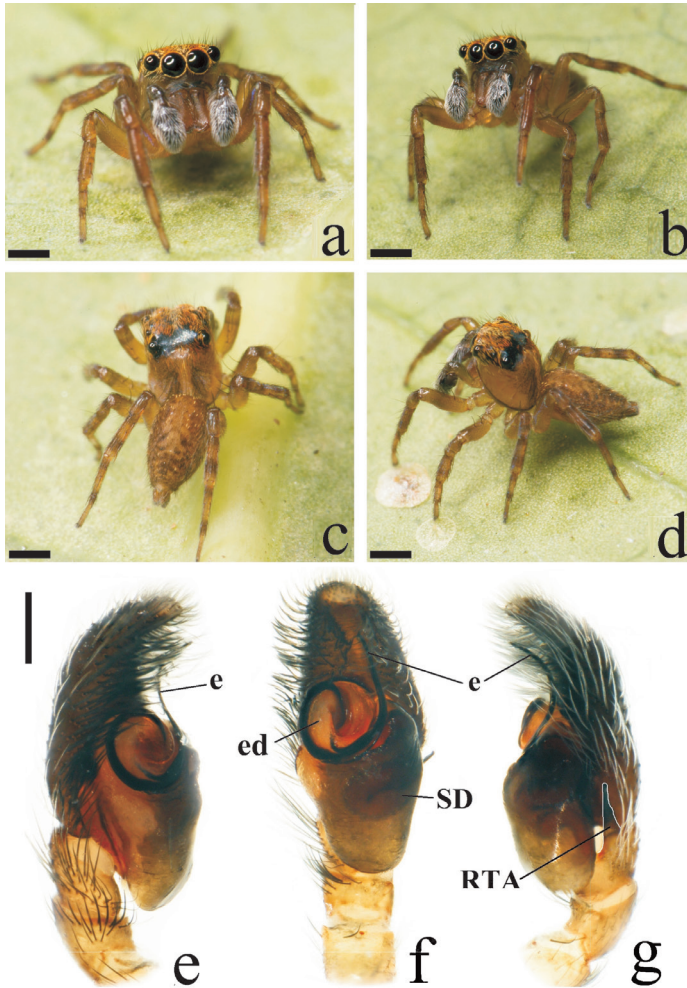
**Morphological Variation.** The males and females from Southern Colombia (Valle del Cauca, figs. 3a-d) present a different pattern of coloration in comparison with those from Northern Colombia (Magdalena, figs. 4a-g), with prosoma, abdomen and legs with a

reticulated brown pattern of coloration, but without any difference in the reproductive characters, so here they are considered as be part of the same species. Chickering (1946: 155) and Cheng *et al.* (2015: 10) previously noticed this high color variation, both in males and females.

**Distribution and Natural History.** Panama (Colón, Panamá, Darién) and Colombia (Magdalena, Quindío, Valle del Cauca) (Fig. 6). Known altitudinal distribution: 20-1239 m. New record from Colombia. The species has been found beating foliage of plants such as *Eugenia procera* (Sw.) Poir.



**Figures 4a-f.** *Maeota serrapophysis* (Chamberlin & Ivie, 1936), (ICN-Ar 3381), a-c) left male palp, a) proventral view, b) ventral view, c) retrolateral view; d-e) female epigynum, d) dorsal view, e) cleared, ventral view; f) male, habitus; g) female, habitus. Scale bar=0.20 mm (a-c), 0.10 mm (d-e), 0.50 mm (f-g). co = copulatory opening, e = embolus, fd = fertilization duct, RTA = retrolateral tibial apophysis, SD = sperm duct, sp = spermatheca, TL = proximal tegular lobe.



**Figures 5a-g.** *Ilargus galianoae* Zhang & Maddison, 2012, male, (ICN-Ar 3398), a-d) living male, a-b) frontal views, c) dorsal view, d) lateral view; e-f) left palp, e) prolateral view, f) ventral view, g) retrolateral view. Scale bar= aprox. 1.00 mm (a-d), 0.20 mm (e-f). e = embolus, ed = embolic disc, RTA = retrolateral tibial apophysis, SD = sperm duct. Figures a-d are copyright © 2016 J.S. Moreno, released under a Creative Commons Attribution (CC-BY) 3.0 license.

(Myrtaceae) and *Sapindus saponaria* L. (Sapindaceae) in one of the few preserved relicts of the most endangered ecosystem of the country (i.e. the tropical dry forest), and beating foliage in wet forest near to a river in low shrubs.

***Maeota betancuri* Galvis, 2015**

Fig 6

**Note.** For diagnosis and further taxonomic information, see Galvis (2015: 37).

**Material examined.** COLOMBIA, Tolima: 1 female, Rovira, Vereda Martínez, Finca La Gaitana, camino a Quebrada El Salado, 4.291°N, 75.208°W, [830 m], 29 May to 2 Jun 2015, *W. Galvis, V. Muñoz*, ICN-Ar 7978. **Cundinamarca:** 1 male, 2 female,



La Mesa, Agroparque Mutis, [4.630°N, 74.463°W], 950 m, 21 Nov 2015, *C. Mora*, *F. Cala-Riquelme*, *N. Castro Cortéz*, *V. Muñoz*, ANDESIN 2971, ICN-Ar 3389, ICN-Ar 3390; 1 female, Zipacón, Vereda La Cabaña, Finca Villa Mercy, [4.761°N, 74.374°W], 1500 m, 29 Nov 2014, *D. Luna leg.*, ICN-Ar 3377.

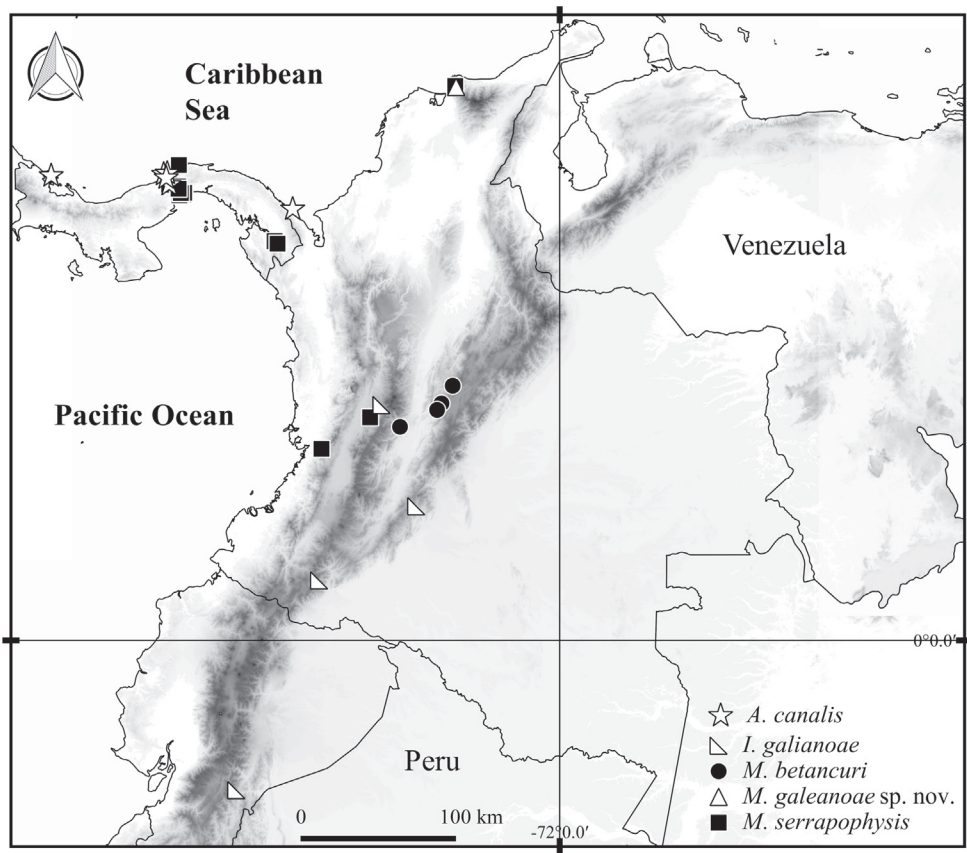
**Distribution and Natural History.** Only known from Colombia (Cundinamarca, Tolima) (Fig. 6). Known altitudinal distribution: 830-1700 m. New record from the Andean state of Tolima, and the municipalities of La Mesa and Zipacón (Cundinamarca). The species has been

found beating low shrubs in disturbed and dry Andean forests. The specimen was collected beating low shrubs in a low-dry Andean ecosystem, and in a farm, in a palm crop.

*Anasaitis canalis* (Chamberlin, 1925)  
Fig 6

**Note.** For diagnosis and further taxonomic information see Chickering (1946: 136) and Zhang & Maddison (2015: 15, figs 13-19, 660-661).

**Material examined.** COLOMBIA, **Chocó:** 5 males, 5 females, Acandí, Sapzurro,



**Figure 6.** Known distribution of the species of *Anasaitis* Bryant, *Maeota* Simon and *Ilargus* Simon treated here, from Panama to Colombia and Ecuador.

Reserva Natural Tacarcuna, 8.663°N, 77.366°W, 13 m, Jun 2015, *W. Galvis and CARBIO team*, ICN-Ar 8100.

**Distribution and Natural History.** Panama (Bocas del Toro, Canal Zone Biological Area) and Colombia (Chocó) (Fig. 6). Known altitudinal distribution: 4-178 m. New record for Colombia. Both males and females were all collected together above or under leaf litter, in quantities at least of 3 or 4 individuals per m<sup>2</sup>, in an disturbed lowland-wet forest near human constructions.

***Ilargus galianoae* Zhang & Maddison, 2012**

Figs 5a-g, 6

**Note.** For diagnosis and further taxonomic information, see Zhang & Maddison (2012b: 16).

**Material examined.** COLOMBIA, **Caquetá:** 1 male, 1 female, Parque Nacional Natural Los Pichachos, Guayabal-Andalucía, [2.696°N, 74.882°W], 1700 m, 17 to 24 Nov 1997, *V. Rodríguez*, ICN-Ar 3359-3360. **Putumayo:** 1 male, San Francisco, Vereda Minchoy, road to Patacoyo river, 1.206°N, 76.835°W, 2345 m, 15 May 2015, *J.S. Moreno*, ICN-Ar 3398.

**Distribution and Natural History.** Known from Colombia (Risaralda, Caquetá, Putumayo) and Ecuador (Morona Santiago) (Fig. 6). Known altitudinal distribution: 1700-2345 m. New record from the Caquetá and Putumayo states. The species have been found beating foliage of median shrubs and foraging among the rocks and dried leaves on roads of two well-preserved Andean forests. Zhang & Maddison (2015: 112, fig 779) presented a photograph of an unconfirmed live male that may correspond to the species, based in the coloration pattern of the male examined here (Figs. 5a-d).

## AUTHORS PARTICIPATION

JSM and WG collected, revised and diagnosed the material. WG was responsible for species description. WG and JSM revised literature, drafted the manuscript and contributed to the critical discussion. WG prepared the images. JSM take the pictures of the living spiders. Both authors read and approved the final manuscript.

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