

Exploring the diversity of *Eutimesius* Roewer, 1913: new species and records from Colombia and Venezuela (Opiliones, Gonyleptoidea, Stygnidae)

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Abstract

This study contributes taxonomic information on the genus *Eutimesius* Roewer, 1913. Three new species are described: the sympatric species *E. aroa* **sp. nov.** and *E. guaichia* **sp. nov.** from Yaracuy state and *E. canoabo* **sp. nov.** from Carabobo state in Venezuela. The male of *E. ephippiatus* (Roewer, 1915) is described for the first time. Remarks are made on the distribution of *E. ornatus*, and a complementary description of male genitalia is provided for *E. simoni* Roewer, 1913. New departmental records are added for *E. ephippiatus* and *E. simoni*. An updated distribution map and a key to the identification of the males of the species in the genus are presented.

Key Words

Harvestmen, Heterostygninae, Laniatores, Neotropics

Introduction

The family Stygnidae is a group of primarily mid-sized harvestmen with 114 species (Kury et al. 2023), most diverse in Brazil (61 species), Venezuela (26 species), and Colombia (13 species); however, it occurs in other Andean and Caribbean countries (Pinto-da-Rocha 1997; Kury 2003). A systematic revision of the family, including a hypothesis of its relationship, was published over two decades ago (Pinto-da-Rocha 1997), dividing the group into three subfamilies: Nomoclastinae (now considered a separate family) and the rest of the species arranged in a symmetrical topology containing two subfamilies, Het-

erostygninae and Stygninae (except for *Gaibulus* Roewer, 1943) (Pinto-da-Rocha 1997).

The genus *Eutimesius* Roewer, 1913 belongs to the subfamily Heterostygninae and is characterized by the presence of white, dry spots on the dorsal scutum. These dry spots bear a resemblance to those documented by Kury in DaSilva and Gnaspini (2010) for certain Gonyleptidae species. Within the context of our study, we opt for the term ‘Dry Spots’ instead of ‘Dry Mark,’ as employed in the aforementioned research. Notably, these spots exhibit a tendency to diminish in visibility or become nearly imperceptible upon contact with alcohol, mirroring what has been previously documented in Gonyleptidae species.

The five species currently included within the genus were originally classified under at least five different genera: *Eutimesius*; *Dichobunistygnus* Roewer, 1915; *Hoplostygnus* Roewer, 1915; *Metaphareus* Roewer, 1912; and *Xanthostygnus* Mello-Leitão, 1949. Pinto-da-Rocha (1997) synonymized four of these genera and restructured the group into *Eutimesius*, defined at the time as four species distributed in Colombia and Venezuela. Since the comprehensive taxonomic revision of the family (Pinto-da-Rocha 1997), the genus *Eutimesius* has experienced minimal modifications within its classification. Notably, the taxonomy remained relatively stable until the inclusion of a unique species, *Eutimesius punctatus* (Roewer, 1913), which was incorporated into its taxonomic framework from the genus *Metaphareus* by Villarreal et al. (2019a).

Most of the species within the genus are restricted to the northern Andes of Colombia and Venezuela (Pinto-da-Rocha 1997; Villarreal et al. 2019a). In the Colombian Andes, two species have been recorded: *Eutimesius ephippiatus* (Roewer, 1915) from the department of Quindío (see Kury 2003 for details) and *Eutimesius ornatus* (Roewer, 1943) from the department of Cundinamarca. In Venezuela, only two species have also been recorded: *Eutimesius albicinctus* (Roewer, 1915) and *E. punctatus* (Roewer, 1913) from Mérida State, both in the Andean region of this country (Villarreal et al. 2019a). Additionally, a female of “*E. ornatus*” has been recorded in Táchira State (Pinto-da-Rocha 1997); however, the identity of this record is here discussed.

Only the type species of the genus occurs outside the Andes: *Eutimesius simoni* Roewer, 1913, which inhabits the Amazonas basin and has been recorded from Brazil, Colombia, Ecuador, and Peru. In Colombia, *E. simoni* is known to occur in the department of Putumayo (Pinto-da-Rocha 1997).

Despite the relatively low number of described species in this genus, recent unpublished surveys suggest a significantly greater diversity, with at least seven undescribed species (OV unpublished data) known exclusively in the Venezuelan Andean cloud forests exhibiting high levels of endemism.

This paper describes three new species: two sympatric species from Yaracuy State and one from Carabobo State in Venezuela. Additionally, the description of the previously unknown male of *E. ephippiatus*, remarks on the distribution of *E. ornatus*, and a complimentary description of male genitalia for *E. simoni* also report new departmental records of *E. ephippiatus* and *E. simoni* in Colombia.

Materials and methods

All measurements are in millimeters and were taken with a stereomicroscope, referring to the maximum length and width. Setiferous tubercles (i = small, I = large) on pedipalps are given in proximal to distal order. For color descriptions, we used the standard names of the 267 color centroids of the NBS/IBCC color system as named in Centore (2016). The description pattern follows Villarreal et al. (2021); the nomenclature of tubercle rows in the legs follows Da Silva and Gnaspini (2010) and Hara et al. (2010); the integumentary

ornamentation follows Da Silva and Gnaspini (2010); and the nomenclature of dry spots on the DS follows Kury in DaSilva and Gnaspini (2010). The terminology for chaetotaxy of penis lamina parva and malleus follows Kury and Villarreal (2015), and the terminology for dorsal scutum outline types follows Kury and Medrano (2016). The term “genital bauplan as Heterostyginae,” as employed in diagnosis or descriptions, adheres to the definition provided by Villarreal et al. (2019b). We refer to intercoxal tubercles as those fused tubercles that connect two coxae of the legs on their ventral side. The pictures were taken with a Canon digital camera coupled to a stereoscopic microscope Wild M7A, a Nikon COOLPIX P1000 with tripod, and an Olympus OMD Mark II attached to a stereoscopic microscope and microscope AmScope. The multiple images of each species at different focal planes were combined with CombineZP Suite software (Hadley 2015) to increase the depth of field and were posteriorly edited in Photoshop CC 2017 software. The drawings were made with Inkscape 1.3.2. Genital features were studied following the protocol described by Acosta et al. (2007). The first-order administrative divisions of Colombia (departments) and Venezuela (states) are underlined. Maps were made using ESRI ArcGIS® 10.1 software.

Abbreviations: **AL** – maximum abdominal scutum length; **AW** – maximum abdominal scutum width; **BaCh** – basichelicerite length; **br** – broken; **CL** – carapace length; **CIPp** – pedipalp claw; **CoPp** – pedipalpal coxa; **CW** – maximum carapace width; **DS** – dorsal scutum; **DSW** – dorsal scutum width; **DSL** – dorsal scutum length; **FeL** – femur length; **FePp** – pedipalpal femur; **IOD** – interocular distance; **LP** – lamina parva; **MS** – macrosetae of penis; **PeTr** – pedipalpal trochanter; **Pp** – pedipalps; **PaPp** – pedipalpal patella; **TaPp** – pedipalpal tarsus; **TiPp** – pedipalpal tibia; **TiL** – tibia length.

Depositories (curators): **IaVH** – Instituto Alexander von Humboldt, Villa de Leyva, Colombia (Jhon Neita Moreno); **ICN-Ao** – Instituto de Ciencias Naturales of the Universidad Nacional de Colombia, Bogotá, Colombia (Eduardo Flórez); **MPUJ_ENT** – Colección entomológica, Museo Javeriano de Historia Natural (Giovanny Fagua); and **MIZA** – Museo del Instituto de Zoología Agrícola “Francisco Fernández Yépez”, Maracay, Venezuela (Quintín Arias).

Results

Taxonomic accounts

Family Stygnidae Simon, 1879

Subfamily Heterostyginae Roewer, 1913

Genus *Eutimesius* Roewer, 1913

Included species. *Eutimesius albicinctus* (Roewer, 1915); *Eutimesius aroa* sp. nov.; *Eutimesius canoabo* sp. nov.; *Eutimesius ephippiatus* (Roewer, 1915); *Eutimesius guaichia* sp. nov.; *Eutimesius ornatus* (Rower, 1943); *Eutimesius punctatatus* (Roewer, 1913); *Eutimesius simoni* Roewer, 1913.

Diagnosis. Heterostygninae with white, dry spot on the dorsal scutum. Carapace with interocular monticle or spine, and scutal area III with two acute paramedian

spines. Genital “bauplan” as Heterostygninae, LP with distal cleft, and long basal “neck.” MS-B ventrally positioned (Fig. 1) when compared to *Innoxius*.

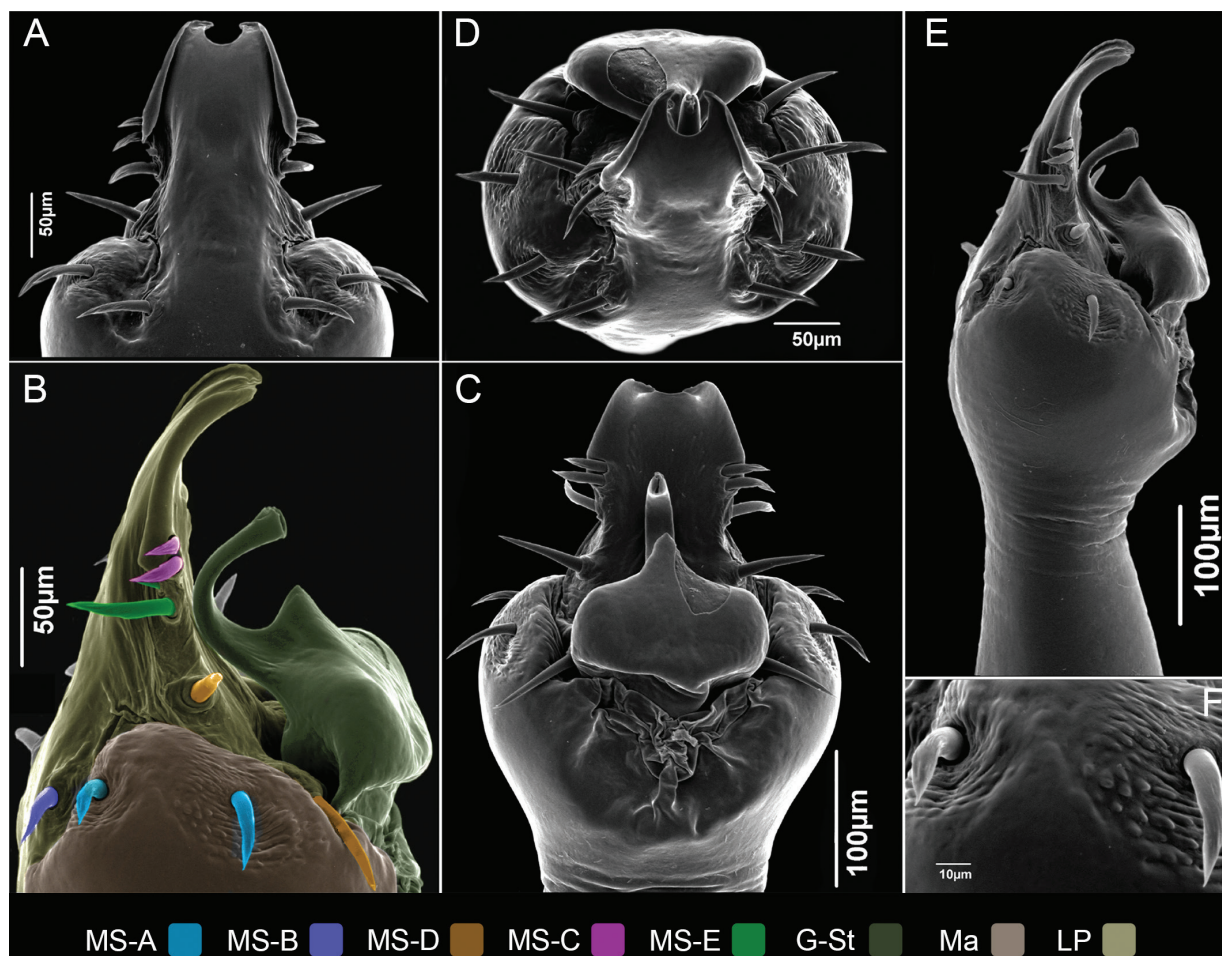


Figure 1. *Eutimesius* sp., male (IAvH 3000054 - undescribed species from Norte de Santander, Colombia), showing the genital bauplan in the genus. Penis: **A.** Ventral view; **B., E.** Lateral views; **C.** Dorsal view; **D.** Apical view; **F.** MS-A, detail in lateral view. Abbreviations: GSt = gland, stylus; LP = lamina parva; Ma = malleus; MS = macrosetae of penis.

Distribution (Fig. 2). So far, species of the genus (except the Amazonic *E. simoni*) are primarily known to be distributed in the Andes, specifically in the Cordillera Oriental of Colombia (WWF ecoregion, Cordillera Oriental montane forests, NT0118; and Northern Andean páramo, NT1006) and in the Cordillera de Mérida of Venezuela (WWF ecoregion, Venezuelan Andes montane forests, NT0175). The records of *Eutimesius aroa* sp. nov., *Eutimesius canoabo* sp. nov., and *Eutimesius guaichia* sp. nov. represent the first occurrences of the genus—considered until now an Andean component—in the Venezuelan Coastal Range (WWF ecoregion, Cordillera de la Costa montane forests, NT0117) and the first records outside the Cordillera de Mérida in this country. Records of Heterostygninae in the Coast Range refer primarily to the genera *Stygnoplus* Simon, 1879, and *Stenostygnellus* Roewer, 1913.

Natural history (Fig. 3). Opiliones exhibit diverse microhabitat preferences within forest ecosystems. Within the family Stygnidae, species demonstrate foraging locations within the understory, utilizing both arboreal substrates such as tree trunks

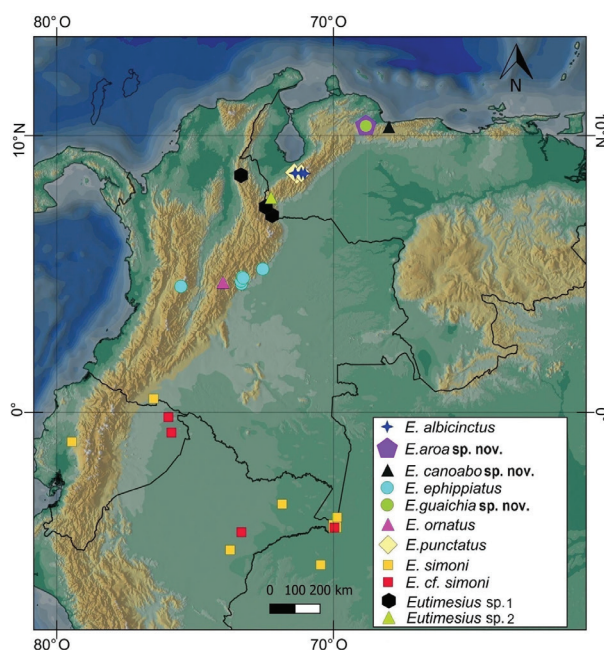


Figure 2. Map showing the distribution of *Eutimesius*.

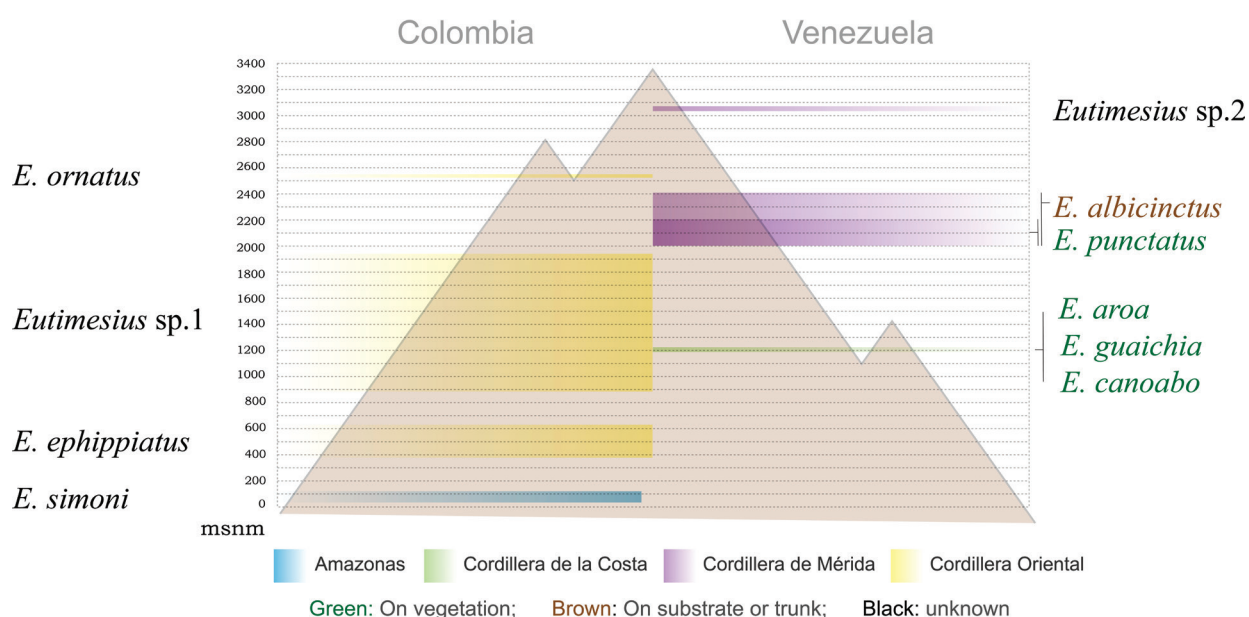


Figure 3. Schematic diagram illustrating the known altitudinal range for species of *Eutimesius*, their biogeographic area of occurrence, the country, and the microhabitat used if known.

and ground-level leaf litter. Villarreal et al. (2019b) documented *E. punctatus* utilizing the upper vegetation, such as small trees and shrubs, positioned well above the forest floor at heights of 1.5–3 meters, for foraging and oviposition. Additionally, at least one species of *Stenostygnellus* has been reported to deposit its eggs between the leaf and stem of certain palms (Villarreal and Machado 2011). The three species described here were consistently collected at heights between 1.5 and 2 meters above ground, exclusively within shrubby vegetation or small trees. A preference for microhabitat was suggested for species within this genus (Villarreal et al. 2019b).

The altitudinal range occupied by species of this genus is extensive, ranging from low elevations in the Amazon to heights reaching 3,050 meters in the Venezuelan Andes. However, the majority of species are found above 1,000 meters, typically in cloud forest habitats. Only *E. simoni* has been recorded in lowland areas between 70 and 110 meters in altitude, which is characteristic of the Amazonian region. *E. ephippiatus* occurs at the foothills of the Andes between 500 and 1,000 meters. All other species occur above 1,000 meters in altitude. The highest altitude record corresponds to a single female from Táchira state in Venezuela, misidentified as *E. ornatus* (Pinto-da-Rocha 1997), reaching 3,050 m.

Key to males of *Eutimesius* species

- 1 Paramedian spines of the area III fused (Fig. 13)..... *E. simoni*
- Paramedian spines of the area III separated (Figs 5A, 7 A) 2
- 2 DS yellowish background with conspicuous dark circular spots on the scutal areas (Villarreal et al. 2019b: figs 1–4)....
.....*E. punctatus*
- DS generally dark brown; rarely yellow, but in no case with that pattern of dark circular spots on the scutal areas (Figs 4, B, 6A, C)..... 3
- 3 Tibia IV with a conspicuous prodorsal subdistal spine (Fig. 7F)..... *E. canoabo* sp. nov.
- Tibia IV without a conspicuous prodorsal subdistal spine (Figs 5F, G, F)..... 4
- 4 Scutal areas II–III divided (Figs 9, 10A, B); chelicerae, pedipalp and sometimes legs with intense green coloration5
- Scutal areas II–III entire (Figs 4, 5A, B, 11, 12 A, B); no intense green coloring on the chelicerae, pedipalps, or legs (Figs 4, 11) 6
- 5 Lateral margins of DS and inner margin of eyes without white dry spots (Pinto-da-Rocha, 1997: figs 57, 58); femora III greenish..... *E. ornatus*
- Lateral margins of DS and inner margin of eyes with white dry spots, eyes completely encircled by white dry spots (Figs 9, 10A, B); femora III not greenish *E. ephippiatus*
- 6 Femur IV slightly curved and distally widened, with long and wide ventrodiscal spines; patella IV as wide as long, with two distal very large dorsal tubercles; and tibia IV swollen, about two times as long as wide (Fig. 12F, G)
..... *E. guaichia* sp. nov.
- Femur IV almost straight, with small ventrodiscal tubercles; patella IV longer than wide, and tibia IV cylindrical and not swollen, between 5.5 and 9.6 times longer than wide..... 7

- 7 Pattern of small, white dry spots forming a lateral line on the margins of the DS and delineating the border of both halves of the scutal area I (Pinto-da-Rocha, 1997: figs 49, 50); tubercles of the pro and retroventral rows of the femora IV confined to the distal portion (Pinto-da-Rocha, 1997: fig. 53)..... *E. albicinctus*
- Pattern of dry white spots not forming a lateral line on the DS margins; at most, they are only present in the anterior region of the carapace and do not delineate the border of both halves of the I area; instead, they are mainly confined to the lateral portions of the area I (Figs 4A, B, 5 A, B); pro and retroventral rows of the femora IV complete..... *E. aroa* sp. nov.

***Eutimesius aroa* Villarreal & Ahumada-C., sp. nov.**

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Figs 4, 5, 14A–C, 2

Type material. VENEZUELA • ♂ *holotype*; Yaracuy, Road Cocorote – Aroa, sector Las Cumaraguas; (10.3520°N,

68.8298°W); 1,200 m a.s.l.; 09 Mar. 2008; (Villarreal O., Escalona H., Jayaro Y., Viera E. leg.) (MIZA 0105934).

Paratypes • 1 ♀, 1 ♂; same as the holotype; (MIZA 0105936).

Diagnosis. It is distinguishable from all other species in the genus by the pattern of dry white spots, occupying

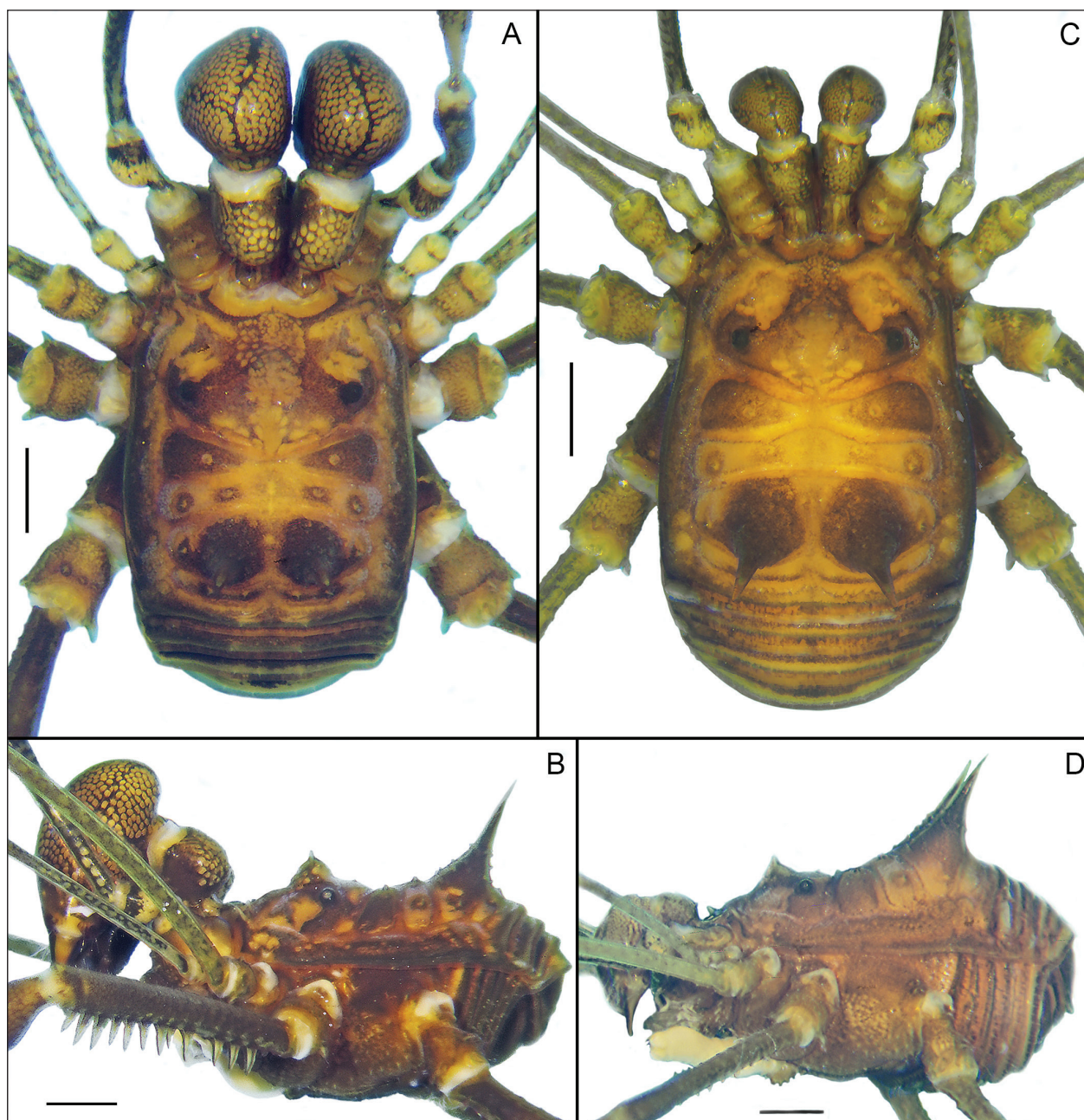


Figure 4. *Eutimesius aroa* sp. nov., A, B. Male habitus, dorsal and lateral views (MIZA 0105934); C, D. Female habitus, dorsal view (MIZA 0105936); C. Male habitus, lateral view (MIZA 0105934). Scale bars: 1 mm.

the anterolateral zone of the carapace, lateral areas of the II and III areas, and part of the lateral margins of the dorsal shield (Figs 4 A, C, 5 A, B), and by the ornamentation of the male femur IV, with large tubercles on both complete ventral rows (Fig. 5 G).

Etymology. The species is named in reference to the Sierra de Aroa, the mountain range in which it inhabits. Aroa is a Chibcha word believed to have a meaning associated with the jaguar, or “tigre.” Noun in apposition.

Description. Male. Measurements. DSL 4.0; DSW 3.5; AL 1.9; AW 2.7; IOD 2.0; pedipalp: CoPp 0.8, TrPp 1.1, FePp 3.8, PaPp 1.8, TiPp 2.4, TaPp 2.2, ClPp 1.8; total 13.9; leg IV: FeL 7.2, TiL 3.9. **Dorsum** (Figs 4A, C, 5A, B). DS outline Epsilon type. Anterior margin of DS with 1–2 anterolateral tubercles. Anteromedial process of the cheliceral sockets shorter than lateral processes. Eyes separated into two small smooth mounds, placed posteriorly on the carapace. Interocular region with small granules in the posterior zone and one central elevated mound that terminates in two short spines. Lateral margins smooth. Mesotergum divided into four areas, III–IV partially fused: I divided medially into two triangular halves, with one conspicuous tubercle on each side; II entire, with four conspicuous tubercles; III with a lateral pair of large tubercles; one pair of paramedian large spines with granulated base; IV with some granules and one row of four tubercles, two each side. Posterior margin and free tergites with a pair of paramedian acute granules. **Venter** (Figs 4C, 5B). Coxa I with four distal tubercles and a medial row of six tubercles; II with a median row of seven–eight tubercles and a posterior row of two–three small tubercles; III with six intercoxal tubercles, five distal, two anterior, six medial, five posterior tubercles; IV with eight intercoxal tubercles, six anterior tubercles,

nine medial tubercles, and about 12 posterior tubercles not aligned. Genital operculum with scattered granules. Stigmatic area with two anterior tubercles, a medial row of four tubercles, and a posterior row of minute granules on the posterior border. Free sternites with a row of small granules. **Chelicerae** (Fig. 5A–C). Segment I smooth with well-defined bulla, with one or two ectoproximal tubercles and one ectodistal tubercle. Segment II swollen, fixed finger with a proximal wide laminar tooth, followed by two very small denticles and three decreasing medial teeth; mobile finger with one subproximal large truncated tooth, one medial pyramidal tooth, and two small subdistal teeth. **Pedipalps** (Fig. 5D, E). Coxa with a group of eight ventral tubercles and three–four dorsal tubercles. Trochanter with a large ventral tubercle and two–three dorsal tubercles. Femur with a ventral row of six small tubercles and dorsally smooth. Patella smooth, distally swollen. Tibia dorsal smooth, ventrally with a row of minute granules; mesal IiIi; ectal IiIiI. Tarsus dorsally smooth, ventrally with two rows of minute granules, mesal IiIiI; ectal IiIiIiI. **Legs** (Fig. 5F–I). Coxae I–II with two dorsal tubercles; III–IV connected by four–five intercoxal tubercles; IV with one dorsodistal large tubercle and scattered small granules and tubercles. Trochanter I dorsally smooth, ventrally with three tubercles; II with two dorsal, one retrodistal, and three ventral tubercles; III with one prolateral, two–four dorsal, one retrodorsal large, and five ventral tubercles; IV with one prolateral, one dorsal, and some minute dorsal granules; one retrolateral large tubercle; and eight ventral tubercles. Femora I–II with longitudinal rows of minute granules; III and IV with the one proventral and one retroventral row of large and spaced apart tubercles; and with two dorsoapical tubercles. Patella III–IV each with one large proventral tubercle; IV

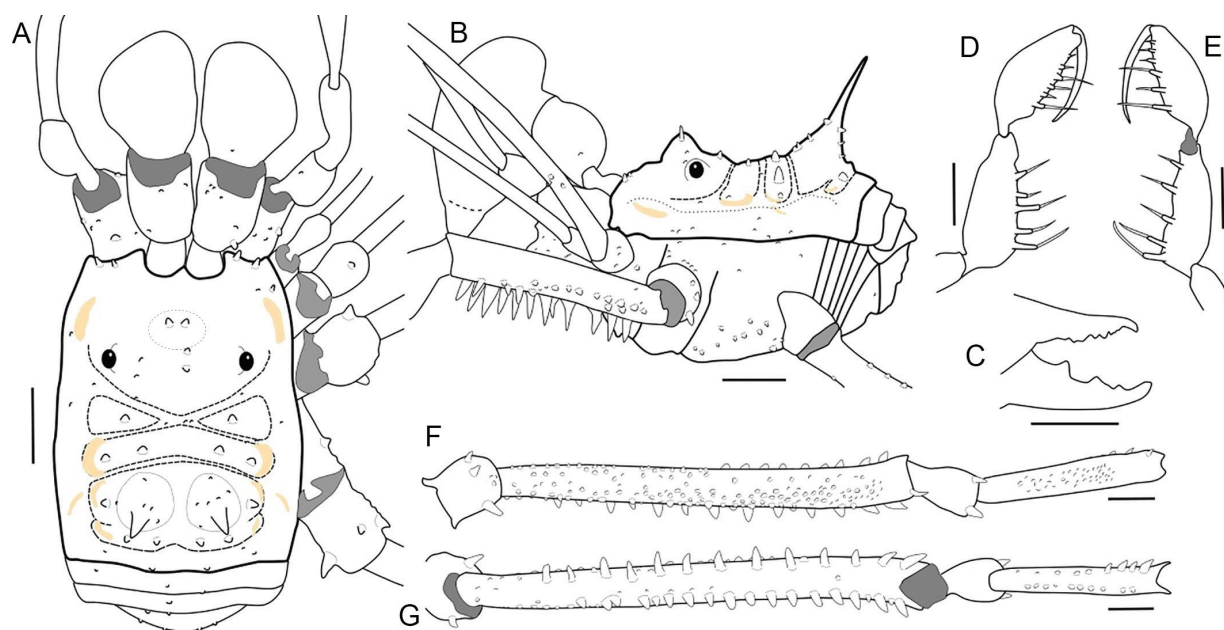


Figure 5. *Eutimesius aroa* sp. nov., male (MIZA 0105934): **A.** Habitus, dorsal view; **B.** Ditto, lateral view; **C.** Right chelicera, frontal view; **D.** Right pedipalp, tibia, and tarsus, ectal view; **E.** Ditto, mesal view; **F.** Right leg IV, dorsal view; **G.** Ditto, ventral view. Scale bars: 1 mm.

with pro and retrodorsal distal large tubercles and with sparse minute granules. Tibia III, with the tubercles of the distal portion of the proventral row enlarged and all the retroventral row with large tubercles increasing in size distally; IV with similar pattern but more conspicuous. Basitarsus I slightly swollen. Tarsal process and scopula present. Tarsal claws III and IV opposites and pectinated. Tarsal counts: 7(3)/19(br)-22(3)/8/9. **Penis** (Fig. 14A–C). Heterostygninae general pattern, as described in Villarreal et al. (2019b). Truncus with the malleus swollen. *Lamina parva* (LP) with a shallow neck and a deep distal cleft. MS-A1-A2 located on the malleus, one pair laterally and one pair more ventrally; MS-B pair ventrally located on the LP; two pairs of MS-C located medially on the LP, dorsally to the neck; MS-D1 large, located slightly proximal to MS-E; MS-D2 basally located, near the base of the gland; MS-E with only one pair of short setae. Gland globose, with short and dorsally curved stylus with small dorsal process. **Color** (Fig. 4A, C). DS mottled on background brilliant yellow (83). Spots on the carapace moderate brown (58); area I, bases of tubercles of area II; tubercles of area III and margins of DS; free tergites and coxae I–IV dorsally dark grayish brown (62) and blackish red (21). Trochanters I–IV and chelicerae reticulated in the same colors as DS. Femora I–II reticulated dark grayish olive (111) on background moderate yellow green (120); III and IV dark grayish olive (111).

Female. Measurements. Dorsal scutum length 4.1; dorsal scutum width 3.4; abdominal scutum length 1.8; abdominal scutum width 2.8; interocular distance 1.7; pedipalp: coxa 0.6, trochanter 0.8, femur 3.9, patella 1.6, tibia 2.0, tarsus 2.2, claw 1.7; total 12.8; leg IV: femur 7.3, tibia 3.9. **Description** (Fig. 4B). Similar to male, except by abdominal scutum Eta type; chelicerae not swollen; ornamentation of leg IV conspicuously less developed; basitarsus I not swollen.

Distribution. Venezuela, Yaracuy. Only known from the type locality (Fig. 2).

Eutimesius canoabo Villarreal & Ahumada-C., sp. nov.

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Figs 6–8, 14D–F, 2

Type material. VENEZUELA • ♂ *holotype*; Carabobo, El Santuario, Posada Ecológica Casa María, near Canoabo, (10.3132°N, 68.2232°W); 1,220 m a.s.l.; 19 Mar. 2008; (Villarreal O., Pereira M.P. leg.); on vegetation about 1.5–2 m above the ground (MIZA 0105945). **Paratypes** • 2 ♀, 1 ♂; same as the holotype; (MIZA 0105946).

Diagnosis. It is distinguishable from all other species in the genus by the pattern of dry white spots, occupying lateral zones of the scutal areas II and III, the medial zone of the scutal areas I and II, dispersal spots on the medial zone of the carapace, and part of the lateral margins of the dorsal scutum (Figs 6A, B, 7A, 8A); and by the ornamentation of the male femur IV, with large tubercles on both complete ventral rows (Fig. 7G).

Etymology. Canoabo is an indigenous word of Arawako origin that means “village next to fresh water.” The species name refers to the type locality, a forest near Canoabo, a town and river of the Cordillera de la Costa in Carabobo State, Venezuela.

Description. Male. Measurements. DSL 3.4; DSW 3.1; AL 1.8; AW 3.1; IOD 1.9; pedipalp: CoPp 0.5, TrPp 0.9, FePp 3.3, PaPp 1.5, TiPp 1.2, TaPp 1.1, ClPp 1.1; total 9.6; leg IV: FeL 7.4, TiL 3.6. **Dorsum** (Figs 6A, 7A, 8A, C). DS outline Epsilon type. Anterior margin of DS with two anterolateral tubercles. Anteromedial process of the cheliceral sockets shorter than lateral processes. Eyes separated into two small smooth mounds, placed posteriorly on the carapace. Interocular region with one central elevated mound with small granules that terminates in four short spines. Lateral margins smooth. Mesotergum divided into four areas, III–IV fused: I divided medially into two triangular halves, with one conspicuous tubercle on each side; II entire, with four conspicuous tubercles; III–IV with a lateral pair of large tubercles; one pair of paramedian large spines with granulated base, with two posterior tubercles. Posterior margin and free tergites smooth, with a pair of paramedian acute granules. **Venter** (Figs 6B, 7B). Coxa I with a cluster of three mesal granules and about 7–8 dispersed granules; II with five intercoxal tubercles, with a median row of eight tubercles and two distal tubercles; III with five-six intercoxal tubercles, 14–15 six tubercles, medially aligned and distally irregularly distributed; IV with seven anterior tubercles and about 18–19 posterior tubercles not aligned. Genital operculum with scattered granules. Stigmatic area with a posterior row of minute granules on the posterior border. Free sternites with a row of small granules. **Chelicerae** (Figs 6A, B, 7A–C). Segment I smooth with well-defined bulla, with three or four ectoproximal tubercles and one ectodistal tubercle. Segment II swollen, fixed finger with a proximal wide laminar tooth, followed by one medial tooth and one small denticle subdistal; mobile finger with one subproximal large truncated tooth, one medial pyramidal tooth, and two small subdistal teeth. **Pedipalps** (Fig. 7D, E). Coxa with a group of about nine ventral tubercles and three dorsal tubercles. Trochanter with two ventral tubercles and two dorsal tubercles. Femur with a ventroectal row of six-eight small granules and one-two ventromesal granules, and dorsally with a row of minute granules. Patella smooth, distally swollen. Tibia dorsal smooth, ventrally with some proximal minute granules; mesal IiIi; ectal IiIi. Tarsus dorsally smooth, ventrally with two rows of minute granules, mesal IiIiIi; ectal iIiIiIi. **Legs** (Fig. 7F, G). Coxae I–II with two dorsal tubercles; III–IV connected by one intercoxal tubercle; IV with four dorsodistal tubercles and scattered small lateral granules and tubercles. Trochanter I dorsally smooth, ventrally with three tubercles; II with one dorsal and three ventral tubercles; III with one retrolateral and five ventral tubercles; IV with one prolateral and one retrolateral tubercle and seven ventral tubercles. Femora I–II smooth; III with longitudinal rows of tubercles and granules, the ventrodiscal larger,



Figure 6. *Eutimesius canoabo* sp. nov., **A, B.** Male habitus, dorsal and lateral views (MIZA 0105945); **C, D.** Female habitus, dorsal view (MIZA 0105946). Scale bars: 1 mm.

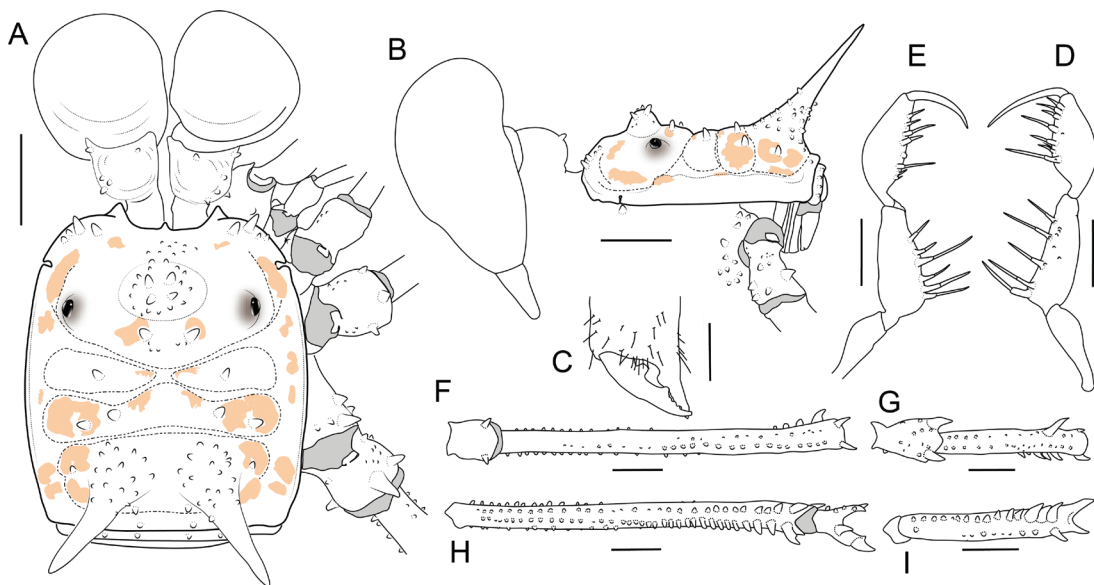


Figure 7. *Eutimesius canoabo* sp. nov., male (MIZA 0105945): **A.** Habitus, dorsal view; **B.** Ditto, lateral view; **C.** Right chelicera, frontal view; **D.** Right pedipalp, tibia, and tarsus, ectal view; **E.** Ditto, mesal view; **F.** Right leg IV, dorsal view; **G.** Ditto, ventral view. Scale bars: 1 mm.

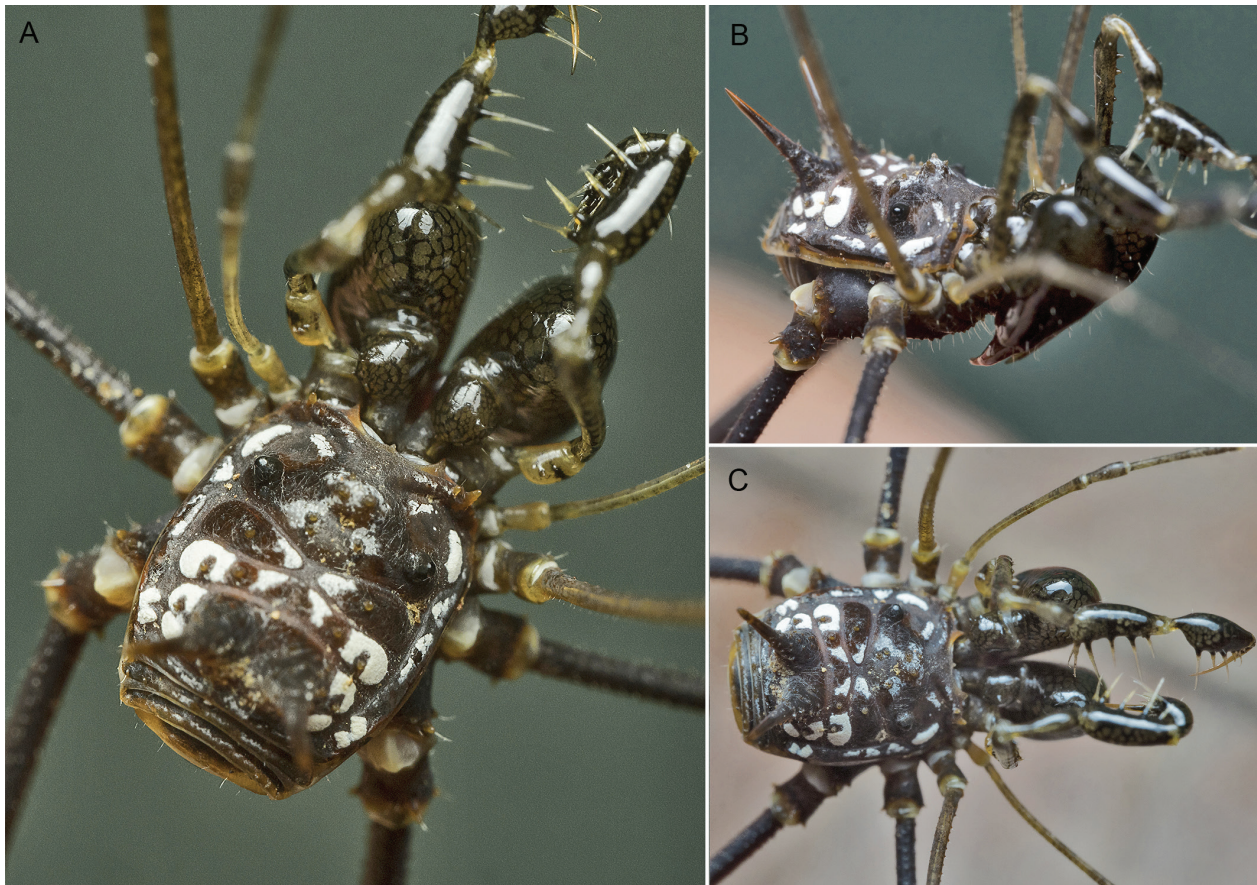


Figure 8. *Eutimesius canoabo* sp. nov. A–C. From Carabobo State, Venezuela.

and one retrodorsal distal large tubercle; IV with the one proventral and one retroventral rows of tubercles increasing in size distally, and with two dorsoapical tubercles. Patella III dorsally granulated and with a proventral tubercle; IV with one large ventral tubercle; and pro and retrodorsal distal large tubercles and with sparse minute granules. Tibia III slightly increased distally, with two rows of ventral granules in the distal portion; IV with the proventral row of tubercles increasing in size distally; and retroventral row of tubercles, with the distal-most tubercle larger than the others. Basitarsus I slightly swollen. Tarsal process and scopula present. Tarsal claws III and IV opposites and pectinated. Tarsal counts: 7(2)–7(3)/19(3)–18(3)/8/9–10. **Penis** (Fig. 14D–F). Heterostygninae general pattern, as described in Villarreal et al. (2019b). Truncus with the malleus swollen. *Lamina parva* (LP) with a shallow neck and a deep distal cleft. MS-A1–A2 located on the malleus, one pair laterally and one pair more ventrally, with duplication in the more ventral on the left side; MS-B pair ventrally located, distally to the MS-A; two pairs of MS-C located medially on the LP, dorsally to the neck; MS-D1 located slightly proximal to between MS-E and MS-C; MS-D2 basally located, near the base of the gland; MS-E with only one pair of short setae visible. Gland globose, with short and dorsally curved stylus with inconspicuous dorsal process. **Color** (Figs 6, 8). DS mottled on dark yellowish brown (78). Spots on the carapace Brilliant orange (49); tubercles of area I–IV; margins of DS; margins of free tergites; and edge of coxae I–IV; dor-

sally light olive brown (94). Trochanters I–IV, with the same colors as DS. Femora I–II reticulated dark yellowish brown (78) on a background of light olive brown (94); III–IV with the same colors as DS. Chelicerae reticulated in the same colors as DS.

Female. Measurements. Dorsal scutum length 3.9; dorsal scutum width 3.5; abdominal scutum length 1.9; abdominal scutum width 2.9; interocular distance 1.5; pedipalp: coxa 0.8, trochanter 0.7, femur 2.8, patella 1.2, tibia 1.8, tarsus 1.6, claw 1.3; total 10.2; leg IV: femur 8.0, tibia 3.4. **Description** (Fig. 6C, D). Similar to male, except by abdominal scutum Epsilon type; chelicerae not swollen; interocular projection lower and slightly forward; ornamentation of leg IV conspicuously less developed; basitarsus I not swollen. Chelicerae and legs lighter.

Distribution. Venezuela, Yaracuy. Only known from the type locality (Fig. 2).

Eutimesius ehippiatus (Roewer, 1915)

Figs 9, 10, 14G–I, 2

Dichobunistygnum ehippiatus Roewer C-F, (1915): 105, figs 57a–b.

Eutimesius ehippiatus: Pinto-da-Rocha (1997): 187, figs 54–56.

Material examined. COLOMBIA • 1 ♂, 1 ♀; Boyacá (New department record), Santa María, sendero Hycá Quye, 5.5 km NW from Santa María, forest edge roadside; (4.89811°N, 73.29344°W); Ago. 2016; (Rodríguez, C. leg.)

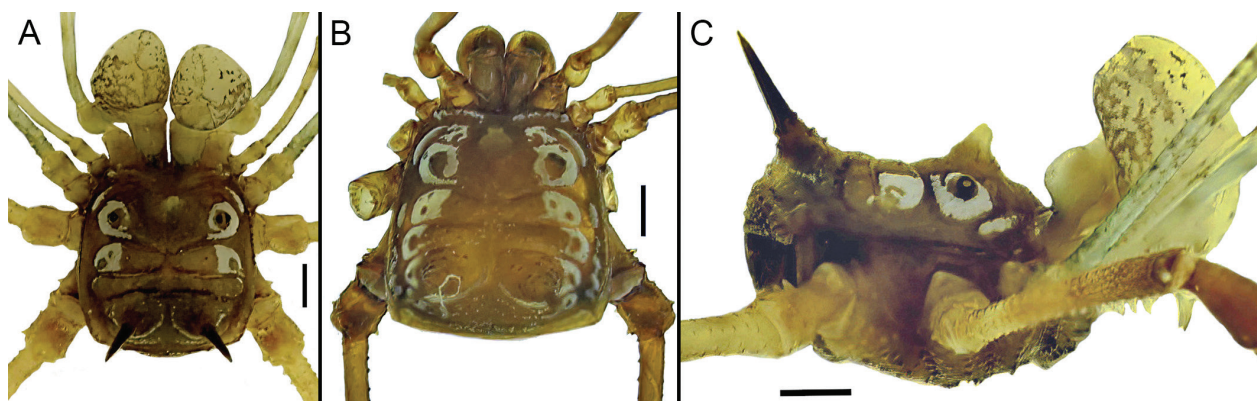


Figure 9. *Eutimesius ephippiatus*: **A.** Male habitus, dorsal view (ICN-Ao-1492); **B.** Female habitus, dorsal view (ICN-Ao-18); **C.** Male habitus, lateral view (ICN-Ao-1492). Scale bars: 1 mm.

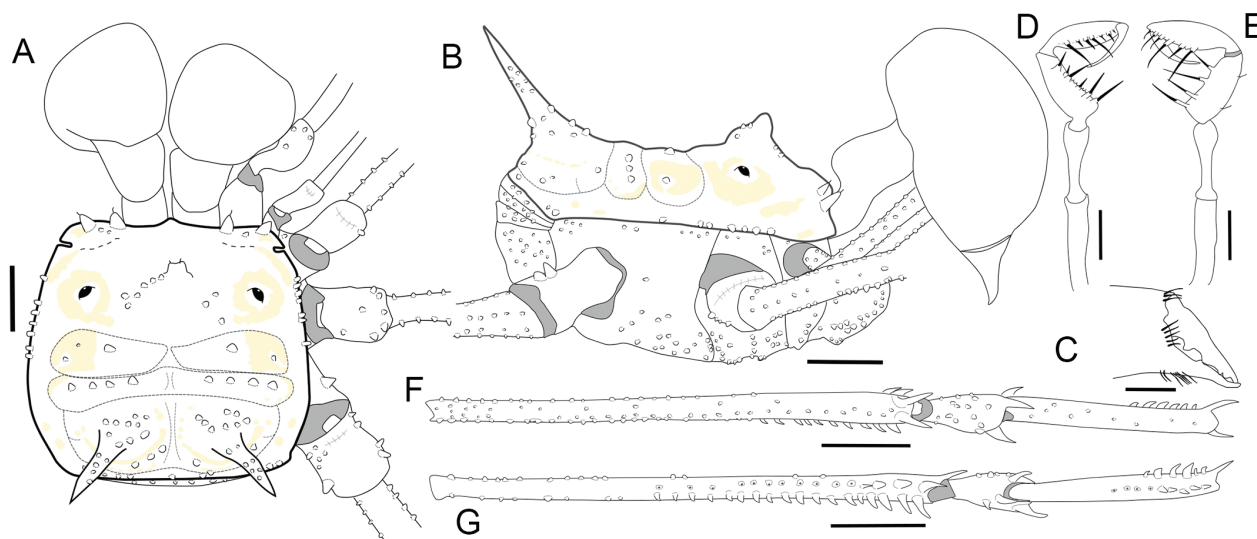


Figure 10. *Eutimesius ephippiatus* male (ICN-Ao-18): **A.** Habitus, dorsal view; **B.** Ditto, lateral view; **C.** Right chelicera, frontal view; **D.** Right pedipalp, tibia, and tarsus, ectal view; **E.** Ditto, mesal view; **F.** Right leg IV, dorsal view; **G.** Ditto, ventral view. Scale bars: 1 mm.

(MPUJ_ENT 004 8876). • 1 ♂, Boyacá, Santa María, Quebrada La Argentina, forest edge, 0.5 km SSW from Santa María; (4.85673°N, 73.26375°W); manual capture; 850 m a.s.l.; Ago-Sep. 2015; (Guzmán, K. leg.) (MPUJ_ENT 0039466). • 1 ♀, Casanare (new department record), Agua Azul; [5.1866°N, 72.5558°W]; 14 Oct. 1978; (La Rotta, C. leg.) (ICN-Ao-18). • 1 ♀, Cundinamarca, Ubalá, Ubalá B., Inspección San Pedro de Jágua, left bank of the Rio Zaquea; [4.7133°N, 73.3016°W]; 500 m a.s.l.; manual capture; Apr. 1998; (Rodríguez, V., Sierra, S., Flórez, E., Varón, A. leg.) (ICN-Ao-1491). • 1 ♂, Cundinamarca, Ubalá, Ubalá B., Inspección Mambita, Vda. Boca de Monte, surroundings Boca de Monte school; (4.7430°N, 73.3016°W); 1,000 m a.s.l.; manual capture; Apr. 1998; (Rodríguez, V., Sierra, S., Flórez, E., Varón, A. leg.) (ICN-Ao-1492). • 1 ♀, Cundinamarca, Ubalá, Ubalá B., Inspección San Pedro de Jágua, Vda. Soya, left bank of the Rio Zaquea; (4.7133°N, 73.3392°W); 500 m a.s.l.; manual capture; Apr. 1998; (Rodríguez, V., Sierra, S., Flórez, E., Varón, A. leg.) (ICN-Ao-1511).

Diagnosis. It is distinguishable from all other species in the genus by the pattern of dry white spots that encir-

led completely the eyes (Figs 9, 10A, B), and the proximal half of femora and tibiae IV without tubercles or with only minute granules (Figs 10F, G).

Complementary description. Male. Measurements. DSL: 1.4; DSW: 2.8; AL: 1.7; AW: 3.0; IOD: 1.6; pedipalp: CoPp 0.7, TrPp 0.7, FePp 2.9, PaPp 1.3, TiPp 1.5, TaPp 1.3, ClPp 0.8; total 9.2; Leg IV: FeL 7.6, TiL 2.6.

Dorsum (Figs 9A, C, 10A, B). DS outline Epsilon type. Anterior margin of DS with four anterolateral large tubercles. Anteromedial and lateral process of the cheliceral sockets short. Eyes separated into two small smooth mounds, placed slightly posteriorly on the carapace. Interocular region with small granules and one central elevated and irregular mound that terminates in two short tubercles. Lateral margins with a row of seven tubercles. Mesotergum divided into four areas, III–IV mostly fused: I divided medially into two oval halves, with one conspicuous tubercle on each side and some lateral granules; two entire, with seven-eight conspicuous tubercles; III/IV with one pair of paramedian very large spines projected backward (three times the length of the interocular eminence); and granulated, posterior region with

a row of small granules. Posterior margin smooth, free tergites with a row of small granules. Anal operculum and sternites with small granules. **Venter** (Figs 9C, 10B). Coxa I with three distal tubercles and a medial row of five tubercles; II with three distal tubercles, a median row of nine tubercles, and a posterior row of three-five small tubercles; III with three distal tubercles, three-five anterior, eight medial, and five posterior tubercles; IV with four intercoxal tubercles, one median row with eight tubercles aligned, some scattered anterior tubercles, and about eight-ten posterior tubercles aligned. Genital operculum and stigmatic area with scattered granules. Free sternites with a row of small granules. **Chelicerae** (Figs 9A, C, 10A–C). Segment I smooth with well-defined bulla with tiny granules. Segment II swollen. Fixed finger with one medial tooth, mobile finger with one sub-proximal large tooth, one medial large tooth and two small subdistal teeth. **Pedipalps** (Figs 9A, 10A, D, F). Coxa with some granules. Trochanter with three dorsodistal tubercles and one dorsal tubercle in the medial position, ventrally with some minute granules. Femur and patella dorsally and ventrally, with some scattered granules. Patella distally swollen. Tibia dorsal with some minute granules, ventrally with a row of minute granules, mesal IIII, ectal IIIIi. Tarsus dorsally and ventrally smooth; mesal IIIIi, ectal IIIIiii. **Legs** (Figs 9A, C, 10A, B, F, G). Coxae I–III unarmed, IV with one large prodorsal tubercle in medial position. Trochanter II with one dorsodistal tubercle, III–IV ventrally granulated, III with one row of 4–5 dorso-distal tubercles and one row of four proventral tubercles, IV with 4–5 prodorsal tubercles (the two distalmost larger), one large retrodorsal sub-distal tubercle, and a group of small prodorsal proximal tubercles. Femora I–II with longitudinal rows of granules dorsally and ventrally, III with one prodorsal distal conical tubercle and ventral row of conical tubercles increasing in size distally, IV with one prolateral and one retrolateral row of small tubercles, dorsally with two distal conical tubercles, and ventrally with two longitudinal rows of conical tubercles increasing in size distally. Patellae III–IV granulated, IV dorsally tuberculated, with one retrodorsal distal conical tubercle, one retroventral row of tubercles (the distalmost larger), two conical ventral tubercles in medial portion (the distalmost larger), and one proventral conical tubercle in distal portion. Tibia III with some granules, IV with one large retrodorsal distal tubercle and some scattered granules and small tubercles, two ventral rows of tubercles. Tarsal claws III and IV opposites and pectinated. Tarsal counts: 7(3)–7(3)/17–19 /9–10/9–9. **Penis** (Fig. 14G–I). Heterostygninae general pattern. Malleus swollen. LP with a shallow neck and a deep distal cleft. MS-A located on the malleus, two pair dorsally and one pair more ventrally; MS-B pair located ventrally; MS-C pair located medially on the LP, distally to the neck; MS-D1 large, located slightly proximal to MS-E; MS-D2 located basally, near the base of the glans; MS-E apparently with only one pair of setae visible. Glans globose, with short and dorsally curved stylus with small dorsal process. **Color**

(Fig. 9 A, C). DS, and free tergites Dark orange yellow (72). Spots on carapace and mesotergum Vivid orange yellow (66). Pair of paramedian spines in area III Brownish black (65). Free sternites Dark yellowish brown (78). Chelicerae reticulated and pedipalps Light greenish yellow (101). Coxae I–IV and trochanters I–IV brilliant yellow (83), Femora I–II reticulated light greenish yellow (101), and III and VI brilliant yellow (83).

Female. Measurements. DSL: 1.2–1.5; DSW: 2.5–3.2; AL: 1.5–2.2; AW: 2.9–3.5; IOD: 1.3–1.7; pedipalp: CoPp 0.4–0.8, TrPp 0.5–0.6, FePp 1.9–2.6, PaPp 1.0–1.4, TiPp 0.8–1.4, TaPp 0.8–1.3, ClPp 0.7–0.9, total 4.3–8.0; Leg IV: FeL 6.2–8.2, TiL 3.4–4.1. **Description of female** (Fig. 9B). Similar to male, except by abdominal scutum wider posteriorly; spots on area II, anterior and lateral margins; chelicerae not swollen; ornamentation of leg IV conspicuously less developed; basitarsus I not swollen. Chelicerae dark yellow (88), pedipalps, trochanters I–III, and femora I–III strong yellow (84), Trochanter IV strong yellowish brown (74), and femur IV strong yellow (84).

Distribution. Colombia, Casanare, Cundinamarca, Quindio (Fig. 2).

Eutimesius guaichia Villarreal & Ahumada-C., sp. nov.

<https://zoobank.org/DCF81C07-BF22-4862-B864-F852AB35F806>

Figs 11, 12, 14 J–L, 2

Type material. Holotype. VENEZUELA • ♂, Yaracuy, road Cocorote - Aroa, sector Las Cumaraguas; (10.3520°N, 68.8298°W); 1,200 m a.s.l.; 09 Mar. 2008; (Villarreal O., Escalona H., Jayaro Y., Viera E. leg.) (MIZA 0105935). **Paratype.** • 1 ♀, same as the holotype (MIZA 0105935).

Diagnosis. It can be distinguished from other congeneric species by the pattern of dry white spots occupying the anterolateral zone of the carapace, the posterior zone of the eyes, and the lateroposterior corner of the DS (Figs 11A, B, 12A, B) and by the shape and ornamentation of the leg IV of the males: femur with a subdistal dorsal group of conspicuous tubercles, patella inflated, dorsal face densely tuberculated with two large curve distal spines like horns, and tibia swollen, dorsally almost smooth, with the prolateral face densely tuberculated, with the retrolateral row with numerous contiguous large tubercles and the retrodorsal row with distal tubercles larger (Fig. 12F, G).

Etymology. The species is named after Guaichía, another name given to María Lionza, a female deity belonging to Venezuelan spiritism, which originates from the state of Yaracuy, where the species inhabits. The myth of María Lionza has been interpreted as a symbol of the biological and cultural mestizaje, or intermixing, that characterizes Venezuela. It expresses the Indigenous, European, and African roots that comprise the cultural diversity of Venezuela. This is a noun in apposition.

Description. Male. Measurements. DSL: 4.4; DSW: 3.7; AL: 1.8; AW: 3.0; IOD: 2.4; pedipalp: CoPp 0.7, TrPp 0.9, FePp 3.3, PaPp 1.3, TiPp 1.8, TaPp 1.7, ClPp 1.3,

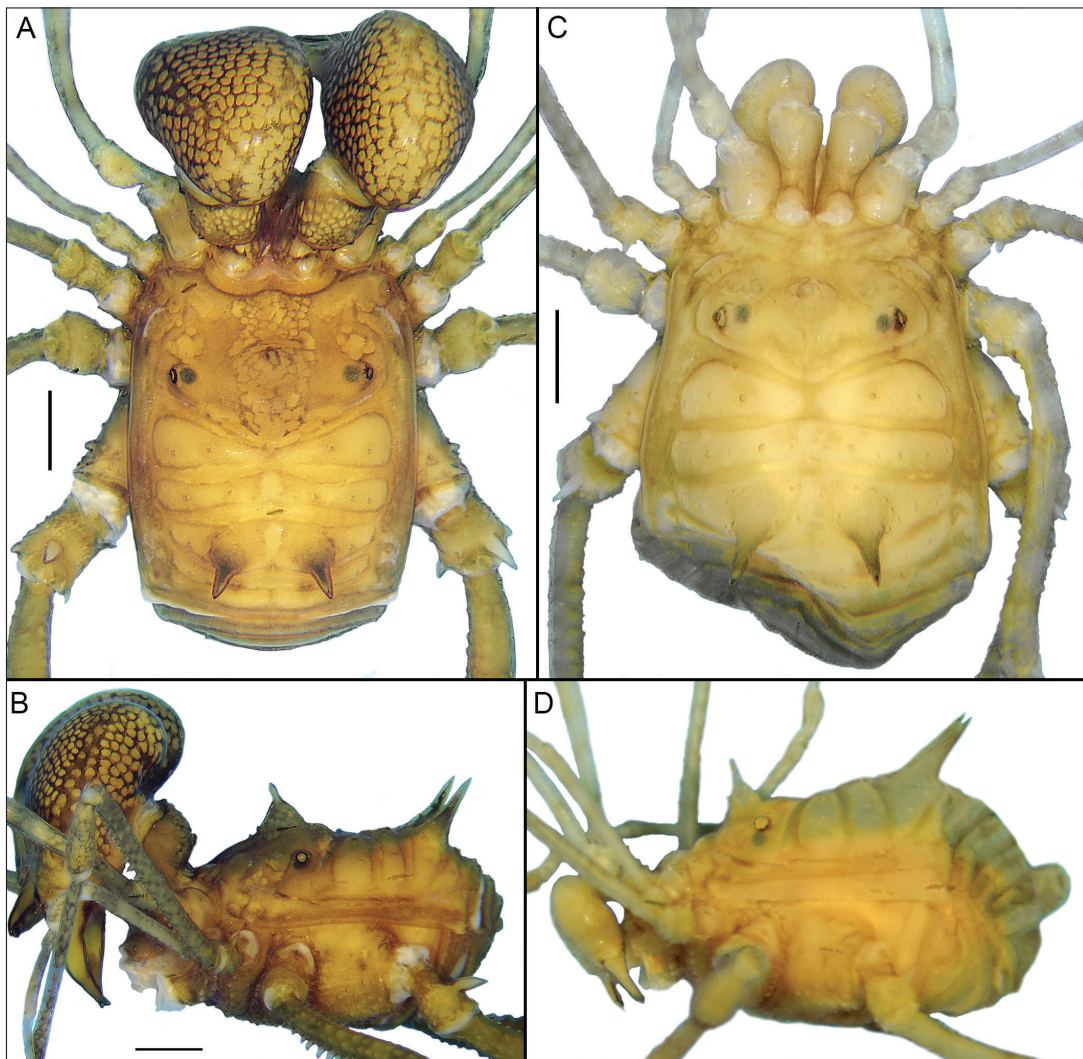


Figure 11. *Eutimesius guaichia* sp. nov., **A, B.** Male habitus, dorsal and lateral views (MIZA 0105935); **C, D.** Female habitus, dorsal and lateral views (MIZA 0105935). Scale bars: 1 mm.

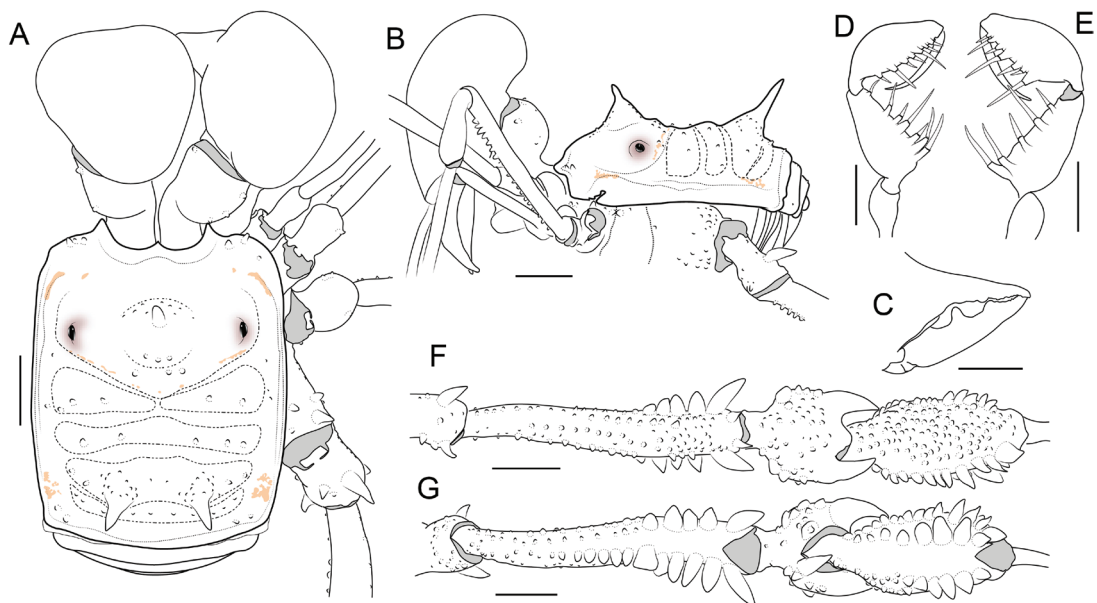


Figure 12. *Eutimesius guaichia* sp. nov., male (MIZA 0105935): **A.** Habitus, dorsal view; **B.** Ditto, lateral view; **C.** Right chelicera, frontal view; **D.** Right pedipalp, tibia, and tarsus, ectal view; **E.** Ditto, mesal view; **F.** Right leg IV, dorsal view; **G.** Ditto, ventral view. Scale bars: 1 mm.

total 11.0; Leg IV: FeL 4.2, TiL 2.7. **Dorsum** (Figs 11A, B, 12A, B). DS outline Epsilon type. Anterior margin of DS with two anterolateral tubercles on each side. Anteromedial process of the cheliceral sockets shorter than lateral processes. Eyes separated into two small smooth mounds, placed slightly posterior on the carapace. Interocular region with some anteromedial granules, with one central elevated eminence that terminates in one spine. Lateral margins smooth. Mesotergum divided into four well-delimited areas: I divided medially into two triangular halves, with three tubercles on each side; II entire, with 3–4 conspicuous tubercles; III with a lateral pair of tubercles; one pair of paramedian large spines with granulated base; IV with a row of 10 tubercles. Posterior margin and free tergites with a row of granules. **Venter** (Figs 11B, 12B). Coxa I with three distal tubercles and some tubercles irregularly distributed; II with three clearly separate rows of tubercles/granules, six anterior, eight medial and larger, and four posterodistal; III with six intercoxal tubercles, one mesodistal wide tubercle, and three rows of granules; IV with eight intercoxal tubercles and densely tuberculated, the distal larger; the prolateral face anteriorly smooth; and posteriorly with seven conspicuous tubercles. Genital operculum with scattered granules. Stigmatic area with scattered granules in the anterior zone and with two rows of granules on the posterior zone. Free sternites with a row of small granules. **Chelicerae** (Fig. 11A, B, 12A–C). Segment I smooth with well-defined bulla, with two or three small ectal tubercles and one mesodistal small tubercle. Segment II very swollen; fixed finger irregularly dentated; mobile finger with one medial large tooth and one subdistal tooth; the apical part finely serrated. **Pedipalps** (Figs 11A, 12D, E). Coxa with a group of 6–7 ventral tubercles and one dorsal tubercle. Trochanter with two ventral tubercles and one dorsal tubercle. Femur with one ventroproximal tubercle and dorsally smooth. Patella smooth, distally swollen. Tibia dorsal smooth, ventrally with a group of small granules; mesal IiIiIi; ectal IiIiIiIi. Tarsus dorsally smooth, ventrally with two rows of minute granules, mesal IiIiIiIi; ectal IiIiIiIi. **Legs** (Figs 11A, B, 12F, G). Coxae I with two dorsal tubercles; II with one tubercle; III–IV connected by two-three intercoxal tubercles; IV with one dorsodistal large tubercle and scattered tubercles. Trochanter I with one dorsal granule, ventrally with four tubercles; II with one large dorsal, two retrolateral and ventrally tuberculated; III with one large prolateral distal, three dorsal, two retrodorsal, and ventrally tuberculated; IV with one prolateral large and some granules, two dorsal, the prodorsal very large, one retrolateral distal, and densely tuberculated ventrally. Femora I–II with longitudinal rows of minute granules; III with the proventral y retroventral rows of large tubercles; and with two dorsoapical tubercles, the retrolateral large; IV curved and distally swollen, all the rows with large tubercles; the ventral rows with very large tubercles, especially the distal ones; and some dorsodistal tubercles. Patella III dorsally smooth, only with one prodistal tubercle, and ventrally with some minute

granules and two distal tubercles, the proventral larger; IV with a petiolate base and circular shape in dorsal view, prolateral, dorsal, and retrolateral faces densely tuberculated, with two very large distal spiniform tubercles, and ventrally with two large curved tubercles, the proventral larger. Tibia III cylindrical and smooth, with only a retroventral row of about seven granules; IV enlarged, all rows with large tubercles, especially in the distal portion, and on proventral, rostroventral, and retrolateral rows. Basitarsus I slightly swollen. Tarsal process and scopula present. Tarsal claws III and IV opposite and pectinated. Tarsal counts: 6(3)/16(3)/8/9. **Penis** (Fig. 14J–L). Heterostygninae general pattern. Malleus swollen. *Lamina parva* (LP) almost as wide as it is long; the distal half triangular, with a well-marked neck and a circular distal cleft. MS-A1–2 located on malleus, one pair laterally and one pairs more ventrally; MS-B pair ventrally located on the truncus, supernumerary and asymmetric; two pairs of MS-C located medially on the LP, dorsally to the neck; MS-D1 and MS-D2 similar in size; MS-D1 located slightly proximal to MS-E; and MS-D2 basally located, near the base of glans; MS-E as one pair of short setae and one pair of large setae. Glans globose and wide, with a dorsally curved stylus with small triangular dorsal process. **Color** (Fig. 15A, B). DS background Brilliant orange yellow (67), carapace reticulated, lateral margins and spines of area III Dark orange yellow (72), abdominal scutum, and coxa I–IV dorsally Light greenish yellow (101), areas II and III with a medial zone lighter than lateral regions. Pale greenish yellow (104). Chelicerae reticulated dark olive (108) on background moderate greenish yellow (102). Legs reticulated dark grayish olive (111) on background moderate yellow green (120) to moderate greenish yellow (102).

Female. Measurements. DSL: 4.3; DSW: 3.8; AL: 2.1; AW: 3.1; IOD: 1.8; pedipalp: CoPp 0.7, TrPp 0.5, FePp 2.9, PaPp 1.4, TiPp 1.7, TaPp 1.8, ClPp 1.2, total 10.2; Leg IV: FeL 4.7, TiL 3.0. **Description** (Fig. 11C, D). Similar to male, except by the shape of DS, Eta (Fig. 11C), chelicerae not swollen. The mesotergal areas slightly larger in comparison to males. Basitarsus I not swollen. Legs III and IV without developed secondary sexual characteristics, only rows of granules or small tubercles. The female displays the same color pattern as the males, yet the hues are lighter in tone.

Distribution. Venezuela, Yaracuy. Only known for the type locality (Fig. 2).

Eutimesius ornatus (Roewer, 1943)

Fig. 2

Bunistygnellus ornatus Roewer, C.-F. (1943): 37, figs 37–37a.

Eutimesius ornatus: Pinto-da-Rocha (1997): 187, figs 57–64, 461–462, 597.

Remarks. *Eutimesius ornatus* (Roewer, 1943) was described from Bogotá, Colombia (Roewer 1943), and

recorded from Venezuela on a female specimen from the northeastern region of San Cristóbal in Táchira state (Pinto-da-Rocha 1997). However, this particular specimen exhibits clear discrepancies when compared to the male holotype (MCR-3862, SMFD, Pinto-da-Rocha 1997: figs 57, 58, 61, 63, 64), specifically in the pattern of white, dry spots and the size and shape of the spines in area III. While the pattern of white dry spots has displayed stability or minimal intraspecific variation in the specimens examined by us, for example, females with larger spots (Figs 5A, B, 9A, B), the pronounced aforementioned differences observed between the male and female of *E. ornatus* as depicted by Pinto-da-Rocha (1997), coupled with the geographical distance between both disjunct populations, raise the question regarding the identity of the female from Venezuela. *E. ornatus*”, Therefore, we propose that the female from Venezuela represents an undescribed species distinct from *E. ornatus*.

Eutimesius simoni Roewer, 1913

Figs 13, 14 M–O, 2

Eutimesius simoni Roewer, C.-F. (1913): 453, figs 178.

Xanthostygnus fractus Mello-Leitão, C.F. (1949): 32.

Xanthostygnus fractus Mello-Leitão, 1949 is a junior subjective synonym of *Eutimesius simoni* Roewer, 1913 in Pinto-da-Rocha (1997): 190.

Eutimesius miles Henriksen, K.L. (1932): 293, fig. 10.

Eutimesius miles Sørensen, 1932, is a junior subjective synonym of *Eutimesius simoni* Roewer, 1913, in Pinto-da-Rocha (1997): 190.

Material examined. COLOMBIA • 1 ♂; Amazonas (New department record), Leticia, Km 11 vía a Tarapacá; [4.1209°S, 69.9508°W]; (Animal systematics [students leg.]) (ICN-Ao-196). • 1 ♂; Amazonas, Leticia, Km 11 vía a Tarapacá; [4.1195°S, 69.9522°W]; 110 m a.s.l.; pitfall; 27 Oct. 2002; (Animal systematics II leg.) (ICN-Ao-512). • 1 ♂; Amazonas, Leticia, Km 11 vía a Tarapacá; [4.1195°S, 69.9522°W]; 11 Nov. 2001; (Students and Flórez, E. leg.) (ICN-Ao-328). • 1 ♀; Amazonas, Leticia, Km 11 vía a Tarapacá, Quebrada

Yahuaraca, Finca El Agape; [4.1348°S, 69.9436°W]; 100 m a.s.l.; pitfall; Mar. 2009; (Mojica, J.I. leg.) (ICN-Ao-641). • 1 ♀; Amazonas, Leticia, Monifue Amena; [4°6'54.45"S, 69°55'39.82"W]; 70 m a.s.l.; 06 Oct. 2005; (Hernández, C., Lozano, M., Otero, T. leg.) (MPUJ_ENT 0094626). • 1 ♂; Leticia, Monifue Amena; [4°6'54.45"S, 69°55'39.82"W]; 70 m a.s.l.; Oct 2005; (Cortes, Hernández, Lozano, Otero leg.) (MPUJ_ENT 0094638). • 1 ♀; Amazonas, Leticia, Monifue Amena; [4°6'54.45"S, 69°55'39.82"W]; 70 m a.s.l.; manual collection; 24 Mar. 2004; (Galindo, A. leg.) (MPUJ_ENT 0094635). • 1 ♀; Amazonas, Leticia, Monifue Amena; [4°6'54.45"S, 69°55'39.82"W]; 70 m a.s.l.; 06 Oct. 2005; (Trejos, C. et al. leg.) (MPUJ_ENT 0094636). • 1 ♀; Amazonas, Leticia, Monifue Amena; [4°6'54.45"S, 69°55'39.82"W]; 70 m a.s.l.; 30 Oct. 2005; (Rodríguez, G. et al. leg.) (MPUJ_ENT 0094623). • 1 ♀; Amazonas, Leticia, Monifue Amena; [4°6'54.45"S, 69°55'39.82"W]; 70 m a.s.l.; vegetation shake; 24 Mar. 2004; (Rodríguez, D. leg.) (MPUJ_ENT 0094643). • 1 ♀; Amazonas, Leticia, Monifue Amena, Várzea; [4°6'54.45"S, 69°55'39.82"W]; 70 m a.s.l.; vegetation shake; 05 Oct. 2005; (Escobar, L., Morales, A. leg.) (MPUJ_ENT 0094628). • 1 ♂; Amazonas, Leticia, Monifue Amena, Várzea; [4°6'54.45"S, 69°55'39.82"W]; 70 m a.s.l.; manual collection; 05 Oct. 2005; (Ardilla, Corredor, Echeverri leg.) (MPUJ_ENT 0094634). • 1 ♀; Amazonas, Leticia, Monifue Amena; [4°6'54.45"S, 69°55'39.82"W]; 70 m a.s.l.; vegetation shake; 04 Oct. 2005; (Ardilla, Corredor, Echeverri leg.) (MPUJ_ENT 0094642). • 1 ♂; Amazonas, Leticia, Monifue Amena; [4°6'54.45"S, 69°55'39.82"W]; 70 m a.s.l.; vegetation shake; 24 Mar. 2004; (Moreno, N., Uribe, D. leg.) (MPUJ_ENT 0094630). • 1 ♂; Amazonas, Leticia, Monifue Amena, Várzea; [4°6'54.45"S, 69°55'39.82"W]; 70 m a.s.l.; vegetation shake; 30 Sep. 2004; (Salcedo, A., Charry, E., Jaramillo leg.) (MPUJ_ENT 0094637). • 1 ♀; Amazonas, Leticia, Comunidad Monifue Amena; [3°47'34.75"S, 69°52'13.88"W]; 70 m a.s.l.; vegetation shake; (Díaz, A., Arango, S., Sánchez, F. leg.) (MPUJ_ENT 0094625).

Diagnosis. Can be distinguished from all other species of the genus by the fusion of the paired spines of scutal area III (Fig. 13).

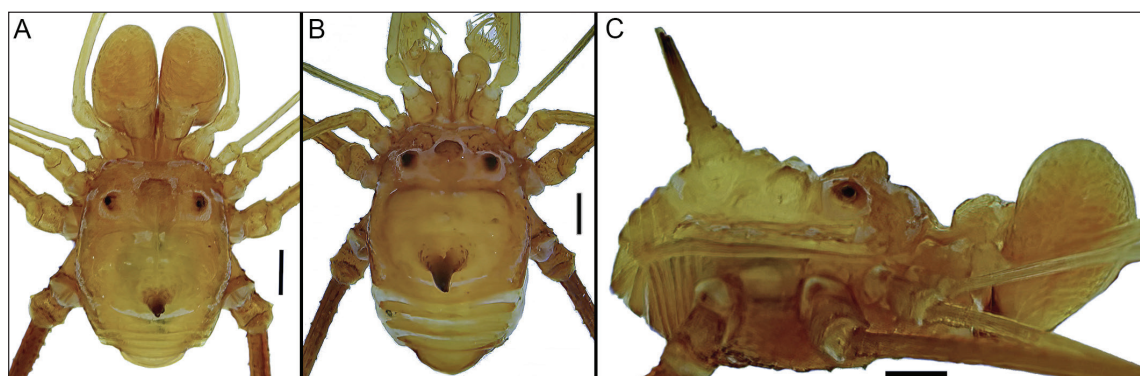


Figure 13. *Eutimesius simoni*: **A.** Male habitus, dorsal view (ICN-Ao-328); **B.** Female habitus, dorsal view (ICN-Ao-641); **C.** Male habitus, lateral view (ICN-Ao-328). Scale bars: 1 mm.

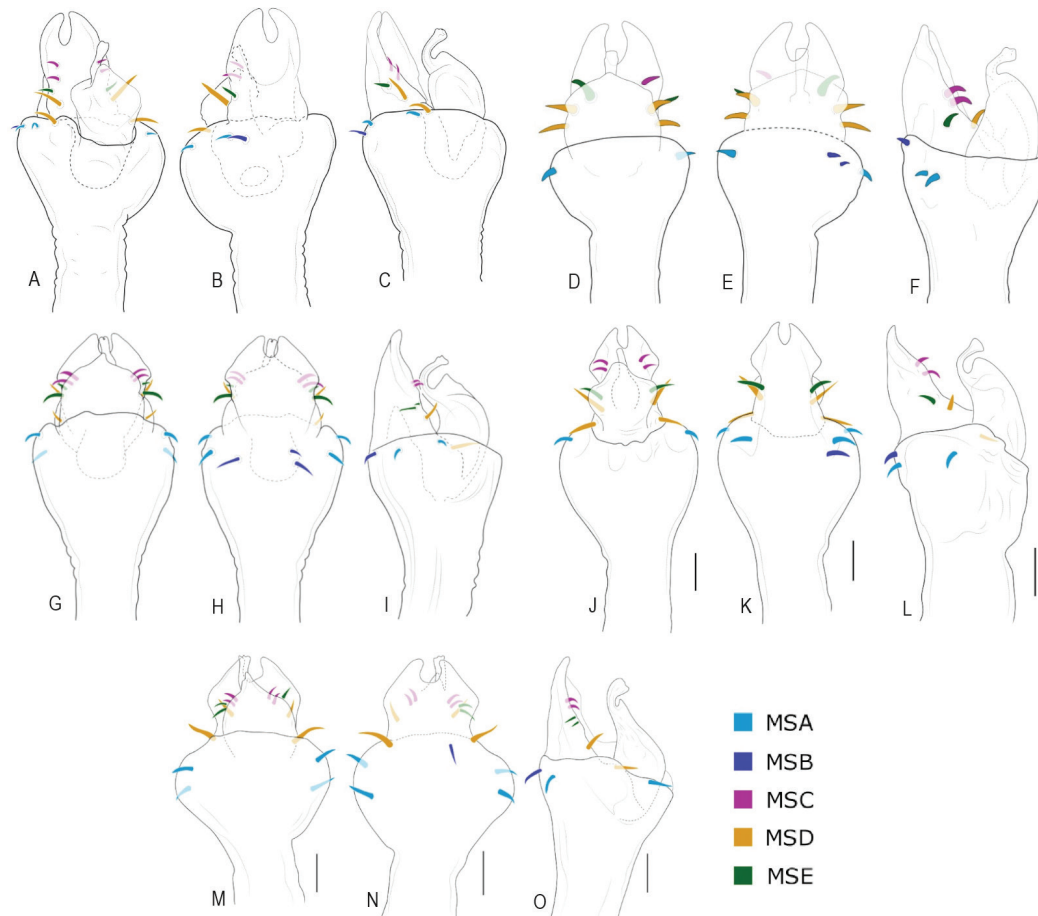


Figure 14. *Eutimesius* spp., penis, distal portion in dorsal, ventral, and lateral view: **A–C.** *E. aroa* sp. nov., (MIZA 0105934); **D–F.** *E. canoabo* sp. nov., (MIZA 0105945); **G–I.** *E. ephippiatus*, (ICN-Ao-1492); **J–L.** *E. guaichia* sp. nov., (MIZA 0105935); **M–O.** *E. simoni*, (ICN-Ao-328). **A–I.** Unscaled.

Complementary description. Male. Measurements. Males (ICN-Ao-196, ICN-Ao-328, ICN-Ao-512). DSL: 1.3–1.5; DSW: 2.2–2.5; AL: 1.8–2.4; AW: 2.6–2.7; IOD: 1.2–1.5; pedipalp: CoPp 0.6–0.7, TrPp 0.4–0.6, FePp 2.7–3.0, PaPp 1.3–1.6, TiPp 1.2–1.4, TaPp 0.9–1.2, ClPp: 0.5–0.7, total 6.8–8.5; Leg IV: FeL 7.8–8.9, TiL 4.1–4.9. Female (ICN-Ao-641). DSL: 2.5; DSW: 2.9; AL: 1.2; AW: 2.4; IOD: 1.3; pedipalp: CoPp 0.6, TrPp 0.4, FePp 2.6, PaPp 1.3, TiPp 1.2, TaPp 0.9, ClPp 0.6, total 6.5; Leg IV: FeL 8.7, TiL 5.1. **Penis** (Fig. 14M–O). Heterostyginae general pattern. Malleus swollen. LP with a neck and a wide circular distal cleft. MS-A1-A2 located on malleus; MS-B pair ventrally located, near the base of LP on the malleus; two pairs of MS-C located dorsomedially on LP, distally to the neck; MS-D1 large, located slightly proximal to MS-E; MS-D2 basally located, near glans basis; MS-E with two pairs of short setae. Glans bulbous, with short and dorsally curved stylus with small dorsal process.

Remarks. Subtle variations were observed in the shape of the LP, which presents less pronounced and rounded lateral projections (instead of acute), a wider neck, and the MS-A, which are separated from each other, with one pair positioned almost ventrally and the other almost dorsally (Fig. 14M–O). Additional-

ly, slight variations in leg coloration and the pattern of dry spots were observed in individuals potentially identified as *E. simoni*, which were evaluated solely through photographs of live specimens (Fig. 15). Due to these variations and limitations in the material study, we have included these records on the map (Fig. 2) as *Eutimesius* cf. *simoni*, leaving open the possibility that more than one species may be involved in the Amazonian populations.

Distribution. Brazil, Amazonas; Colombia, Amazonas; Ecuador, Napo, and Los Ríos; Peru, Loreto (Fig. 15). The species was originally documented in Puerto Asis but erroneously attributed to the Department of Guainia (Pinto-da-Rocha 1997). We hereby correct this misattribution and reassign it to its accurate department, Putumayo.

Discussion

Within Heterostyginae, at least four genera share a similar genital morphology, namely *Eutimesius* and *Innoxius* Pinto-da-Rocha, 1997, from the Andean region; *Minax* Pinto-da-Rocha, 1997; and *Yapacana* Pinto-da-Rocha, 1997, from the Amazon. The latter two can be distinguished from *Eutimesius* by the reduction and shape of



Figure 15. *Eutimesius* cf. *simoni*: **A.** From Puerto Montúfar, Sucumbíos, Ecuador; **B–D.** From Iquitos, Maynas, Peru; **E.** From Leticia, Amazonas, Colombia; **F.** From Parque Nacional Yasuní Tipu Tini, Napo, Ecuador. Photographs by: Mark Silverstein (**A**), Jiri Hodecek (**B**), Martin Cejka (**C**), Phill Kahler (**D**), Traveler Dan (**E**), and Cinthya Villegas (**F**).

the LP and the widening of the malleus in the former, and by the increase in the number of MS-A and the loss of the dorsal process of the stylus in *Minax*. Meanwhile, *Innoxius* is separated from *Eutimesius* solely by somatic characters, including the DS shape, the ornamentation of scutal areas, and the presence of white dry spots (Pinto-da-Rocha 1997; Villarreal et al. 2019a). However, the position of the MS-B, which is ventral in *Eutimesius* (Figs 1, 14) and tends to be lateral in *Innoxius*, is suggested here as

a putative character that could help distinguish the two Andean genera.

The monophyly of *Eutimesius* was demonstrated by Pinto-da-Rocha (1997) based on the three following characters: (1) cephalothorax with one wide median eminence, (2) cephalothorax with white spots, and (3) dorsal scute areas with white spots. To date, only three species of the genus have been included in phylogenetic analyses (Pinto-da-Rocha 1997). In that analysis, *E. simoni*

was identified as the sister species to *E. albicinctus*, with *E. ornatus* as the sister species to both.

Despite raising questions about intergeneric relationships in our work, we have chosen not to conduct a phylogenetic analysis in this study due to several key factors. Recent taxonomic changes and the reinterpretation of genital traits in the Stygnidae family have occurred independently of a phylogenetic analysis (e.g., Villarreal et al. 2019a, 2019b). In addition, since the proposal of a homology hypothesis for genital macrosetae (Kury and Villarreal 2015), many of the characters would require significant reinterpretation, necessitating a nearly complete reanalysis to create a new matrix, altering our focus primarily on the alpha taxonomy of a single genus. Additionally, we face challenges related to homologies in characters directly involving the study group, such as tegument coloration and dry spots. Lastly, it is important to note that we are aware of the existence of some new species that will be described in the near future.

Although the need for a complete phylogenetic analysis of the family is increasingly evident, this goes beyond the main objective of our present work and is part of future projects that involve a broader group of authors. In addition, due to the nature of the group studied, the lack of this analysis does not limit or affect the results obtained in this work.

Author contributions

All authors of this work contributed significantly to the project. OV designed and led the project, collecting Venezuelan species, diagnosing new species from Venezuela and Colombia, and working on the description, photography, and illustration of the new species. DAC visited Colombian collections, analyzed the material from this country, and generated the corresponding figures. DAC also contributed to the description of the new species and created the map. GRN provided the facilities for the project to be carried out, including funding for the visits to collections and laboratory facilities. All authors worked together on the writing of the article and agreed on the final version of the manuscript presented.

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