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The Neotropical harvestman genus *Vima* Hirst, with description of a new species from Colombia (Arachnida: Opiliones: Agoristenidae)

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Abstract. The harvestman genus *Vima* Hirst, 1912 is revised and newly diagnosed. A new species from Caquetá (Colombia), *Vima panita* sp. nov., is described and illustrated. This is the second species of *Vima*, and it represents the first record of the genus from Colombia expanding its range by 1,500 km to the southwest. Scanning electron micrograph images of the body and photographs of the holotype of *Vima insignis* Hirst, 1912 from Guyana, together with a map showing the distribution of the genus in South America, are provided.

Keywords: Leiosteninae, Neotropics, Colombia, Guyana, *malleus*.

The harvestman suborder Laniatores is the most diverse in Opiliones, with 35 families and 4212 species (Kury 2018), with the Neotropical family Agoristenidae representing an uncommon albeit diverse group of 27 genera and 77 species (Kury 2013; Porto & Colmenares 2014). The subfamily Leiosteninae is the most diverse within Agoristenidae (12 genera, 58 species), and it is distributed in northern South America (Kury 2013; Porto & Colmenares 2014), mainly on tree trunks, in leaf litter and under logs.

The monotypic genus *Vima* Hirst, 1912 is the oldest described agoristenid, and currently only contains the type species *V. insignis* Hirst, 1912 from Guyana. It was first placed in the phalangodid subfamily Tricommatinae by Roewer (1923). Almost sixty years later, *V. insignis* was transferred to Agoristenidae by Soares & Avram (1981) and included in Angelinae by Kury (1993). After that, Pinto-da-Rocha (1996) transferred the species to Leiosteninae – providing drawings of the dorsal scutum, left pedipalp and male genitalia – where it is currently located.

In the present work, we offer a complementary description of *V. insignis* and a description of a new species of *Vima* (including SEM images of male genitalia) from Colombia, representing the first record of the suborder Laniatores from the department of Caquetá.

METHODS

Individuals were photographed using a Sony Cybershot DSC-V1 camera (*V. insignis*) and the multiple resultant images at different focal planes were integrated with CombineZP Suite software (Hadley 2015) to increase the depth of field. The holotype of the new species was photographed with a Leica M205C stereoscope attached to a Leica DFC450 digital camera. All photos were subsequently edited in Photoshop CC 2014 software. Color descriptions use the standard names and numbers of the 267 Color Centroids of the NBS/IBCC Color System (Jaffer 2001+).

Scanning Electron Microscopy (SEM) of the body of *V. insignis* was carried out with a JEOL JSM-6390LV at the Center for SEM of Museu Nacional/UFRJ. The penis drawings of *V. insignis* were vectorized with Inkscape. The penis of the new species was dehydrated with Critical Point Drying (CPD), sputter-coated with gold and examined with a JEOL JSM-6390LV SEM at accelerating voltage of 10 kV at the Rudolf Barth Electron Microscopy Platform of the Oswaldo Cruz Institute / Fiocruz.

Geographic coordinates have been transcribed verbatim from the labels and may be in different formats; when there was no indication of coordinates, they were interpolated between square brackets to indicate that they are estimates, using GoogleMaps. The distribution map was made using ESRI ArcGIS 10.4. Biogeographical units are the WWF Terrestrial Eco-regions of the World (names starting with "NT"; Olson et al. 2001). The climate shapefile of the Köppen-Geiger Climate Classification System was taken from the website of the geographer Murilo Cardoso (Murilo Cardoso, pers. website) and are indicated by colored background areas on the map (Fig. 8).

The morphological terminology follows Kury & Medrano (2016) for dorsal scutum shape and Kury & Villarreal (2015) for macrosetae of male genitalia. The term *malleus* is a translation of hammer [as explained in Kury (2014)] in the penis description. Morphometric abbreviations are: AL = maximum abdominal scutum length, AW = maximum abdominal scutum width, BaCh = basichelicerite length, CL = carapace length, CW = maximum carapace width, DP = dorsal process, DS = dorsal scutum, Fe = femur, LP = lamina parva, Ma = malleus, MS = macrosetae of penis, MS Ds = supernumerary MS D, Mt = metatarsus, PeFe = pedipalpal femur, PePa = pedipalpal patella, PeTa = pedipalpal tarsus, PeTi = pedipalpal tibia, Ta = tarsus, Ti = tibia, VP = ventral plate. All measurements are in mm unless otherwise noted.

Abbreviations of the repositories cited are: BMNH (British Museum of Natural History, currently NHMUK (Natural History Museum United Kingdom, London); ICN (Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá); MNRJ (Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro). The MNRJ material pre-September 2018 fire (*Vima insignis* from Guyana) was destroyed.

Figure 1.—Photographs of male lectotype of *Vima insignis* (NHMUK). Habitus (A–C): A. Dorsal view, B. Frontal view, C. Lateral view. Labels (D–F): D. Label of Hirst syntypes, E. Label of María Rambla, F. Label explaining that Rambla mounted the male genitalia on a slide. Scale bars: 0.5 mm.

RESULTS

Family Agoristenidae Šilhavý, 1973
Genus *Vima* Hirst, 1912

Vima Hirst 1912:66; Roewer 1923:127; Roewer 1927:537; Mello-Leitão 1932:43; Mello-Leitão 1935:93; Mello-Leitão 1938:143; Caporiacco 1951:11; Rambla 1978:12 [part]; Soares & Avram 1981:76; Kury 1993:131; Rambla & Juberthie 1994:219; Pinto-da-Rocha 1996:316; Kury 1997:344; Kury 2003:34.

Type species.—*Vima insignis* Hirst, 1912, by monotypy.

Diagnosis.—DS epsilon type (shared with *Leptostygnus* Mello-Leitão, 1940 and *Paravima* Caporiacco, 1951; iota type in *Barlovento* González-Sponga, 1987). Mesotergum clearly delimited, divided into four areas by marked grooves. Area III with a single domed white protuberance (*V. insignis*) or smooth (*Vima panita* sp. nov.) (single medial spine or two paramedian almost fused spines in *Leptostygnus*; paired tubercles in *Paravima*; two large spines in *Barinas* González-Sponga, 1987, *Ocoita* González-Sponga, 1987 and *Vimina* González-Sponga, 1987; two low spines in *Barlovento* González-Sponga, 1987; smooth in *Avima leucobunus* Roewer, 1949). Fe IV length = four to five times the length of DS, (four times in *A. leucobunus*; two times in *Barinas* and *Vimina*; two to three times in *Paravima*). Lamina parva (LP) of penis with lateral pointed corners (similar to *Barlovento*, *Ocoita* and *Vimina*; some *Avima* spp. with rounded lateral corners). Penis stylus surpassing distal border of LP (shared with *Leptostygnus*, *Paravima* and *A. leucobunus*; in *Barinas* stylus high almost reaches the high of LP). Dorsal keel of stylus with acuminate dorsal process (dorsal keel without any process in *Leptostygnus*; dorsal keel with tiny projection in *A. leucobunus*; not dorsal keel in *Paravima*).

Included species.—Vima insignis Hirst, 1912; Vima panita sp. nov.

Vima insignis Hirst, 1912
(Figs. 1–4, 8)

Vima insignis Hirst 1912:67, pl. 1, fig. 2; Roewer 1923:128, fig. 134; Mello-Leitão 1932:43, fig. 21; Goodnight & Goodnight 1942:3; Caporiacco 1948:613; Goodnight & Goodnight 1949:22; Kury 1993:131; Pinto-da-Rocha 1996:316, figs. 1, 5, 9–10; Kury 2003:34.

Material examined.—1 ♂ *Lectotype male (herewith designated)*: GUYANA: [Potaro-Siparuni region (Region 8)]:

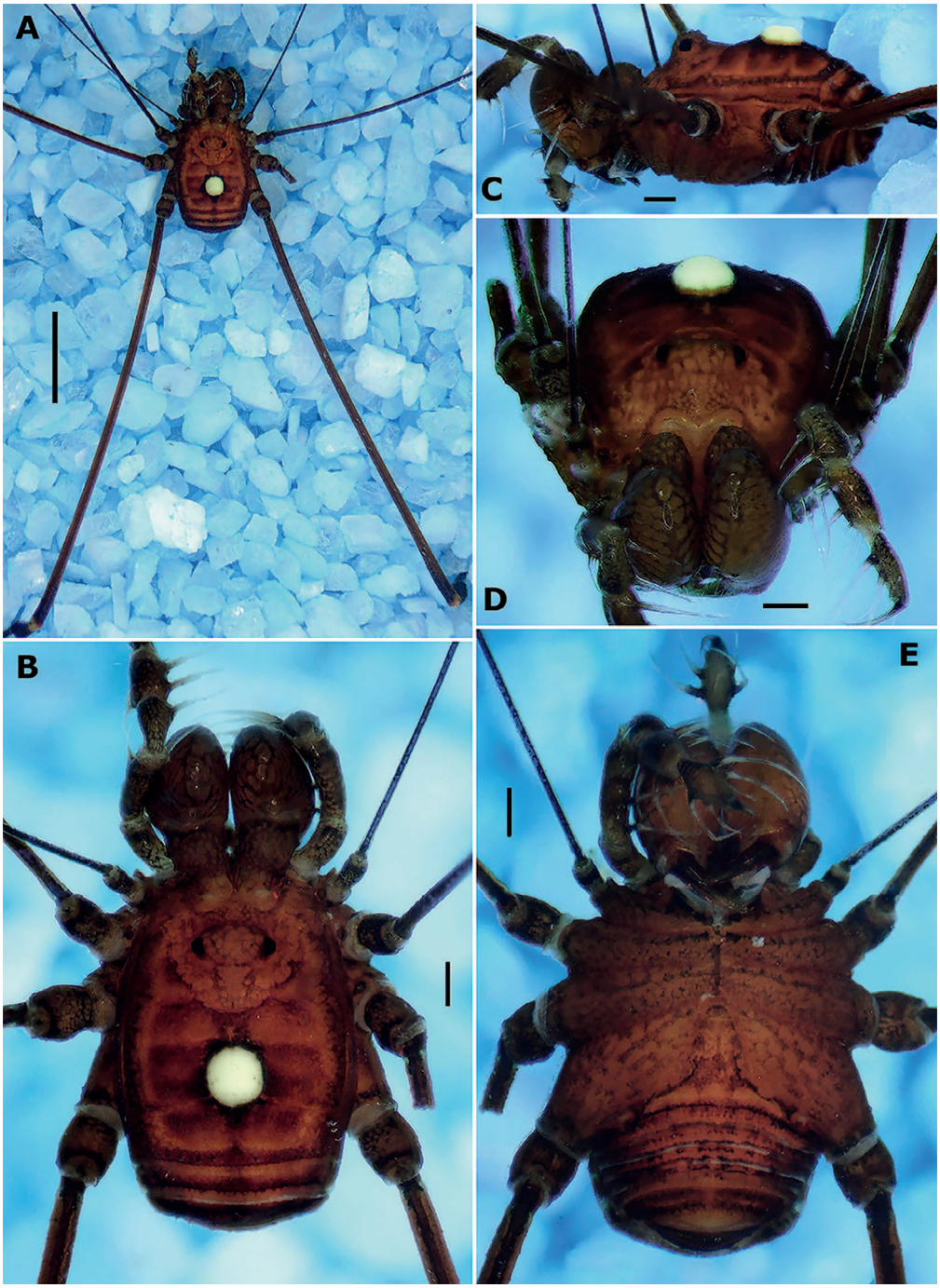

Figure 2.—Male of *Vima insignis* (MNRJ 19562). Habitus. A. Panoramic view, B. Dorsal view, C. Lateral view, D. Frontal view, E. Ventral view. Scale bars: A = 2 mm, B–D = 1 mm.

Higher Potaro River district, [5.347671° -58.956078°], collected by Rose Lloyd; [presented by] J.J. Quelch, [Esq.] (NHMUK).

Paralectotypes: 3 ♀, collected with lectotype (NHMUK),

Other material: GUYANA: 1 ♂, [Potaro-Siparuni region] (Region 8), Potaro River left bank, Chenapou village, 446 m, (4.979310° -59.572470°), 12 June 2016, S. Cally & L. Vanhercel (MNRJ 19551); 1 ♀, same data as MNRJ 19551 (MNRJ 19552); 1 ♂, same data as MNRJ 19551 (MNRJ 19553); 1 ♀, same data as MNRJ 19551 (MNRJ 19554); 1 ♂, same data as MNRJ 19551 (MNRJ 19555); 1 ♂ (MNRJ 19557), [Potaro-Siparuni region] (Region 8), Potaro River right bank, Chenapou village, 483 m, (4.971940° -59.576020°), 13 June 2016, S. Cally & L. Vanhercel; 1 ♀, same data as MNRJ 19557 (MNRJ 19559); 1 ♂, same data as MNRJ 19557 (MNRJ 19560); 1 ♀, same data as MNRJ 19557 (MNRJ 19561); 1 ♂, [Potaro-Siparuni region] (Region 8), Potaro River right bank, Chenapou village, 483 m, (4.971940° -59.576020°), 14 June 2016, S. Cally & L. Vanhercel (MNRJ 19562); 1 ♀, same data

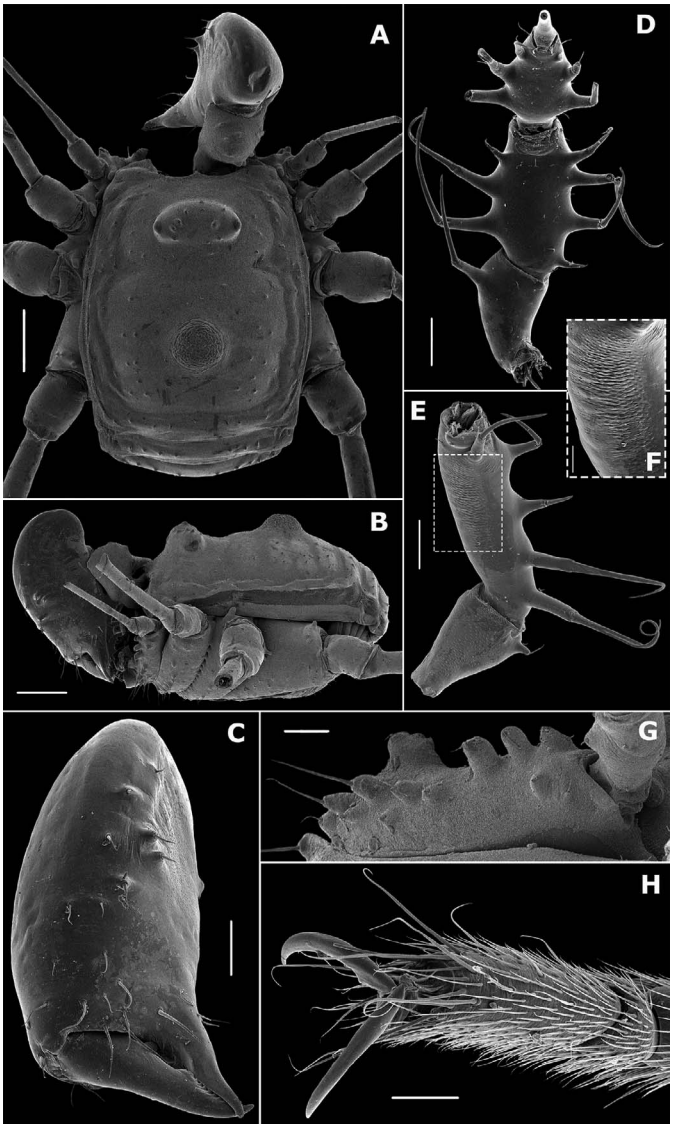

Figure 3.—Scanning Electron Micrograph images of *Vima insignis* (MNRJ 19555). Habitus: A. Dorsal view, B. Lateral view. Chelicera: C. Fronto-mesal view. Pedipalps: D. Patella, tibia and tarsus, ventral view, E. Trochanter and femur, mesal view, F. Detail of striated surface in mesal face of femur. Legs: G. Coxa I, ventrolateral view, H. Leg IV tarsus, oblique view. Scale bars: A–B = 500 um, C–E = 200 um, F, H = 50 um, G = 100 um.

as MNRJ 19562 (MNRJ 19563); 1 juvenile, [Potaro-Siparuni region] (Region 8), Potaro River left bank, Chenapou village, 467 m, (4.990270° -59.568710°), 15 June 2016, S. Cally & L. Vanhercel (MNRJ 19564); 1 juvenile, same data as MNRJ 19564 (MNRJ 19566); 1 ♂, [Potaro-Siparuni region] (Region 8), Potaro River left bank, Chenapou village, 680 m, (5.007920° -59.581000°), 17 June 2016, S. Cally & L. Vanhercel (MNRJ 19568); 1 ♀, same data as MNRJ 19568 (MNRJ 19570); 1 juvenile, same data as MNRJ 19568 (MNRJ 19572); 1 ♂, 1 ♀, Mazaruni-Potaro district, Kartabo point [currently Cuyuni-Mazaruni region (Region 7), Kartabu point], 100 m, [6.383436° -58.695560°], 25 December 1983, W.E. Steiner, EARTHWATCH Research Expedition (USNM AK 05).

Other records.—GUYANA: between Chenapown and Saveritik; Rockstone, [40 m], [5.973905° -58.522995°]; Tukeit; Mazaruni-Potaro, Kamakusa, [90 m], (05E57′N 59E54′W) (Goodnight & Goodnight 1942; Kury 2003).

Complementary description.—Based on male lectotype, male MNRJ 1952 and male MNRJ 19555.

Dorsum: DS epsilon type. Ocularium low, saddle shaped, with some dispersed tubercles. Mesotergum delimited, divided into four areas with diffuse grooves, granulate (Figs. 1A, C, 2B, C, 3A). Abdominal scutum widest at level of groove II. Area I divided in two halves; area II and III with a single medial white domed protuberance (Figs. 1A–C, 2A–D, 3A, B); area IV undivided. Posterior border of scutum substraight. Free tergites I–III with granules (Figs. 2B, 3A, B).

Venter: Stigmatic area with a few granules. Stigmata oval and transverse (Fig. 2E). Coxa I with a curved row of medium-sized tubercles and one proximal large trapezoidal tubercle on the anterior margin (Fig. 3G); coxa II–IV with some granules, coxa II longer than coxa I; coxa III longer than I and II; coxa IV backward (Fig. 2E).

Chelicera: Basichelicerite rectangular, with well-marked bulla, three ectal tubercles on posterior margin and two ectal tubercles on antero-lateral margin. Chelicera swollen (Figs. 2B, 3A). Anterior region of hand with setiferous tubercles of different sizes, going from top of the hand to base of movable and fixed fingers (Figs. 3B, C). Mesal face of hand with small granules in the apical half (Fig. 3C). Fixed finger with the inner surface finely grooved. Movable finger with one trapezoid, sub-basal tooth and with the inner surface at distal portion dentate (Fig. 3C).

Pedipalps: Trochanter with one subapical tubercle on ventral face. Femur with a ventroectal row of four setiferous tubercles, the two basalmost larger than the others (even bending apically), and one medium ventromesal setiferous tubercle in the apical portion (Fig. 3E); meso-distal face of femur with striated surface (Fig. 3F). Patella with one large mesal setiferous tubercle. Tibia ectal iIIi, mesal IIi. Tarsus ectal III, mesal III (Fig. 3D).

Legs: Leg I filiform, legs I–IV straight and smooth (Figs. 2A, 3A). Leg IV thicker than the others; Fe IV length five times DS length (Fig. 2A). Ta IV without tarsal process, claws smooth (Fig. 3H). Tarsal formula (from Hirst 1912): 7/?/7/7.

Penis (Fig. 4): Lamina parva (LP) small and depressed, crescent shaped, with anterolateral sharp corners apically pointed. Malleus (Ma) carrying the branched MS A and MS B in an oblique disposition: 2 pairs of MSA (MS A1 on laterodistal region and MS A2 on dorsoproximal region) and 1 pair of ventroapical MS B. MS C absent. Two pairs of short MS D close together (MS D1 and MS D2) located in the junction of the LP and the Ma, close to the base of the stylus (MS D1 laterally directed and MS D2 more dorsally directed) and one supernumerary macroseta D (here called MS Ds, present just on one side), furthest from the others and dorsally directed. MS E on the ventral side of the LP: 1 pair of MS E1 short and conical and 1 pair of MS E2 large and trifid, been MS E1 located slightly anterior to MS E2. Stylus elongated, straight, surpassing the apical border of the LP, and with a large acuminate dorsal process (DP).

Color (in alcohol): Carapace Strong Reddish Brown (40). Lateral borders of dorsal scutum and free tergites Dark

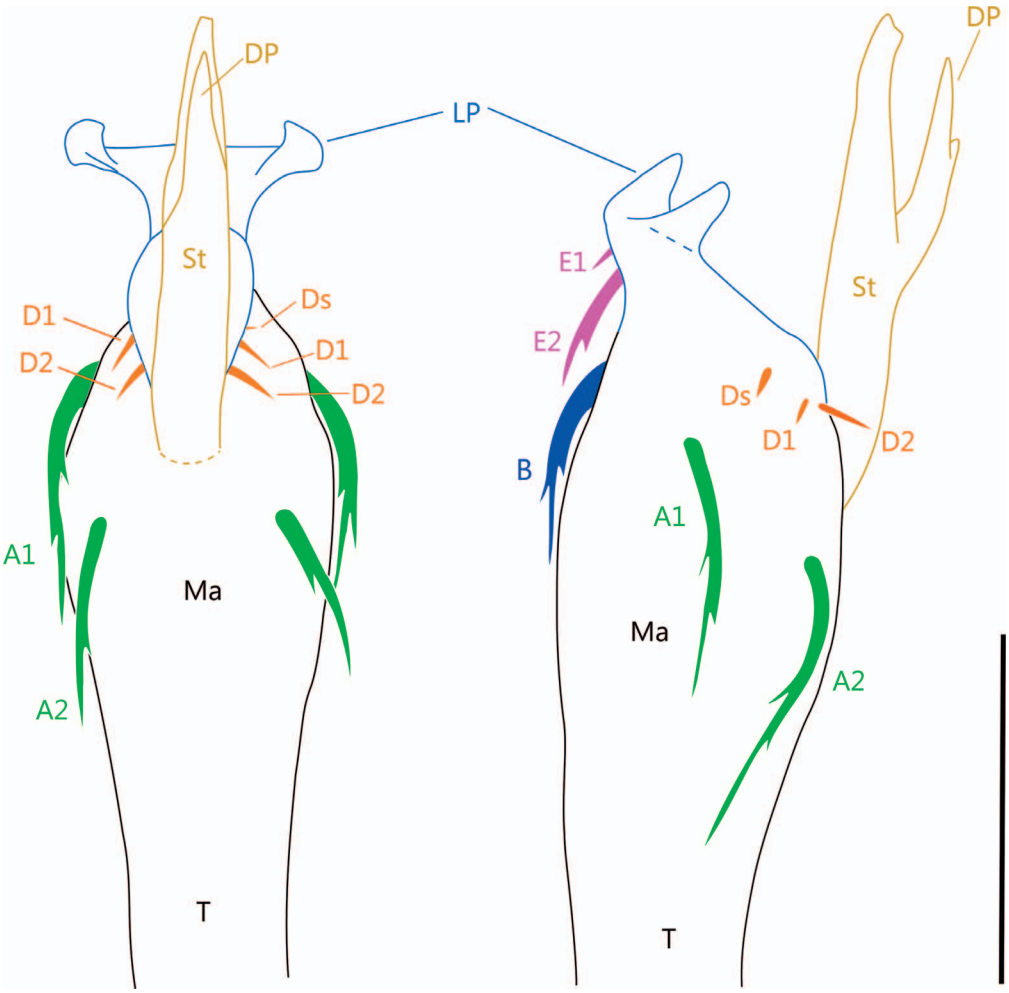

Figure 4.—Male genitalia of *Vima insignis* (modified and adapted from Pinto-da-Rocha 1996) in dorsal (left) and lateral (right) views. Abbreviations: DP = Dorsal Process, LP = Lamina parva, Ma = malleus, Ds = supernumerary macrosetae D, St = stylus, T = truncus. Scale bars: 0.1 mm.

Reddish Brown (44). Pedipalps, chelicerae and legs I–IV Dark Yellowish Brown (78). Protuberance of areas II–III Pale Greenish Yellow (104) (Fig. 2). Remarks. The coloration of the syntypes is considerably modified because of the time the material has spent in alcohol and the degradation of the inner content of the body (Figs. 1A–C).

Sexual dimorphism: Female with chelicera not hypertelic.

Distribution.—*Vima insignis* is only known from Guyana (Fig. 8), between 40 to 680 m a.s.l., in WWF ecoregion NT0125 (Guianan moist forests).

Etymology.—The Latin adjective *insignis* (third declension) means remarkable or exceptional.

Vima panita sp. nov.
(Figs. 5–8)

Material examined.—*Holotype male:* COLOMBIA: *Caquetá*: Florencia, Macagual, 280 m, (1.499481° -75.6554952°), 20 December 2018, M.A. Medrano, A.F. García & F. Arcos (ICN-AO-1884).

Paratypes: COLOMBIA: *Caquetá*: 1 ♂, 2 ♀, same data as holotype (ICN-AO-1885); 2 ♂, 2 ♀, same data as holotype (MNRJ 60286); 1 ♂, Florencia, camino a la Reserva Natural Ecoturística El Danubio, (1.506098° -75.732735°), 380 m, 17 December 2018, M.A. Medrano, A.F. García & F. Arcos, (MNRJ 602364).

Diagnosis.—*Vima panita* has areas I–IV smooth with some disperse granules (in *V. insignis* medial region of areas II–III with a rounded white protuberance); pedipalpal patellae and tibiae exhibit yellowish coloration (in *V. insignis* all the segments of pedipalps are brownish colored); and the stylus tip has a finger-shaped process (in *V. insignis* stylus tip without any process).

Description (adult male).—*Based on male ICN-AO-1884*: Measurements: AL 1.1, AW 1.7, CL 1.0, CW 1.4, DS 2.11, BaCh 0.3; PeFe 0.8, PePa 0.4, PeTi 0.5, PeTa 0.5; Fe I 3.6, Fe II 8.4, Fe III 5.9, Fe IV 8.5; Pa I 0.4, Pa II 0.9, Pa III 0.9, Pa IV 1.0; Ti I 2.7, Ti II 7.1, Ti III 3.6, Ti IV 4.7; Mt I 5.0, Mt II 10.9, Mt III 6.8 Mt IV 9.9; Ta I 1.2, Ta II 2.8, Ta III 1.6, Ta IV 1.9. *Paratypes (n=5, Min–Max):* AL 1.1–1.2, AW 1.6–1.8, CL 0.8–1.0, CW 1.0–1.3, DS 2.0–2.1, BaCh 0.3–0.4; PeFe 0.5–0.7, PePa 0.4–0.5, PeTi 0.4–0.5, PeTa 0.4–0.6; Fe I 3.4–3.8, Fe II 7.7–8.5, Fe III 5.0–6.0, Fe IV 7.8–8.7; Pa I 0.5–0.5, Pa II 0.7–0.8, Pa III 0.9–1.0, Pa IV 0.8–1.0; Ti I 2.3–2.7, Ti II 6.0–6.5, Ti

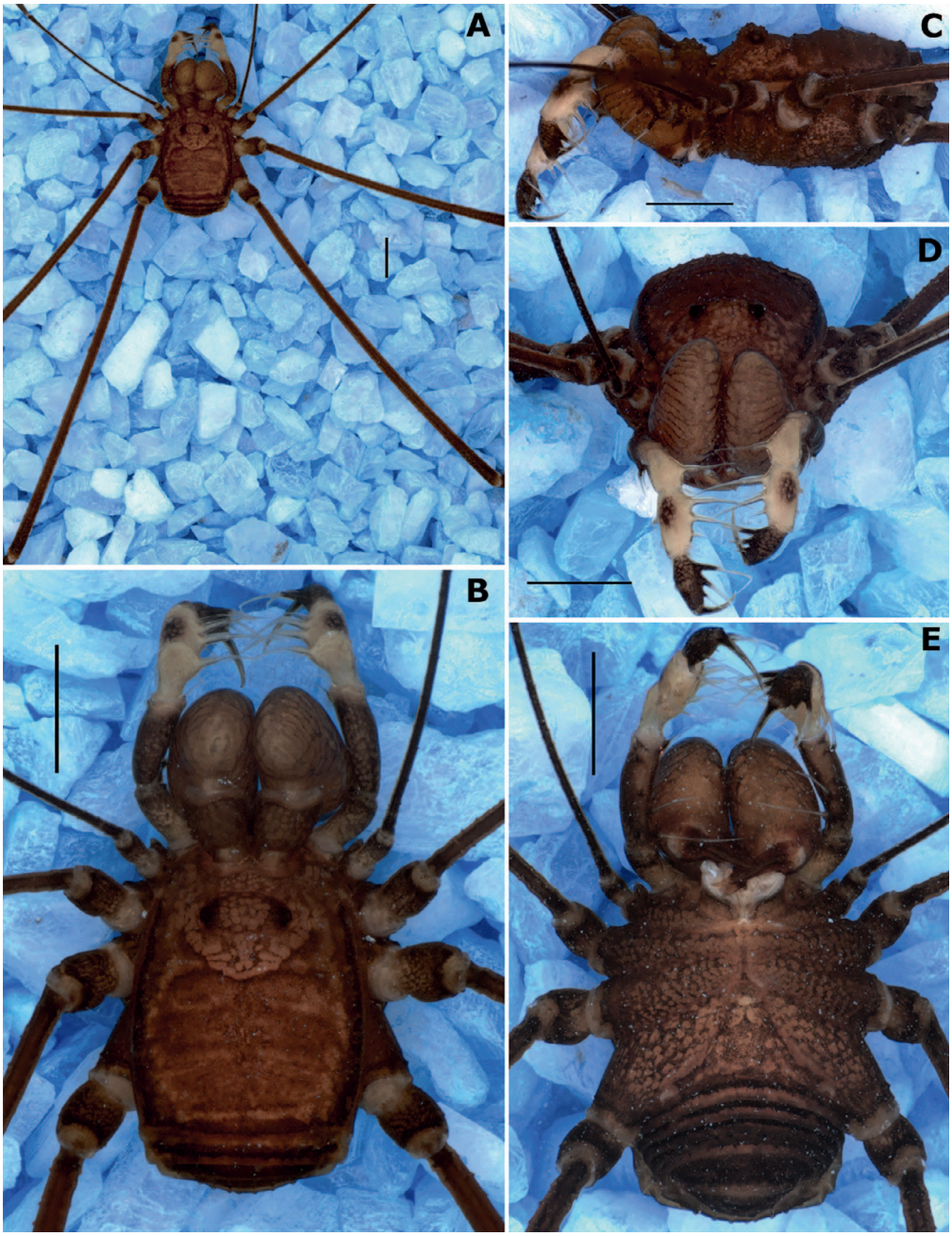

Figure 5.—Holotype of *Vima panita* sp. nov. (ICN-AO-1884). Habitus. A. Panoramic view, B. Dorsal view, C. Lateral view, D. Frontal view, E. Ventral view. Scale bars: 1 mm.

III 3.2–3.6, Ti IV 4.3–4.7; Mt I 4.5–4.9, Mt II 9.3–11.0, Mt III 5.9–6.7, Mt IV 9.1–10.2; Ta I 0.9–1.2, Ta II 2.4–2.6, Ta III 1.1–1.7, Ta IV 1.5–1.8.

Dorsum: DS epsilon type. Ocularium low, saddle shaped, with some tubercles. Mesotergum delimited, divided into four areas by diffuse grooves, granulate (Figs. 5A–D, 6A, B). Abdominal scutum widest at level of groove II. Area I divided into two halves with some granules; areas II–IV undivided and with some granules (Figs. 5A, 6A, B). Posterior border of scutum substraight. Free tergites I–III with a row of granules (Figs. 5B, 5C, 6A, B).

Venter: Stigmatic area with a few granules. Stigmata oval and transverse (Fig. 5E). Coxa I with a curved row of medium-sized tubercles and one proximal large trapezoidal tubercle on the anterior margin (Fig. 6C); coxa II–IV with some granules, coxa II longer than coxa I; coxa III longer than I and II; coxa IV backward (Figs. 5E, 6B).

Chelicera: Basichelicerite rectangular, with well-marked bulla; three tubercles on posterior margin, four larger tubercles on ectal face and some disperse tubercles on mesal face. Chelicera swollen (Figs. 5B, D, 6A). Anterior region of hand with setiferous tubercles of different sizes, going from the middle of the hand to the base of movable and fixed fingers

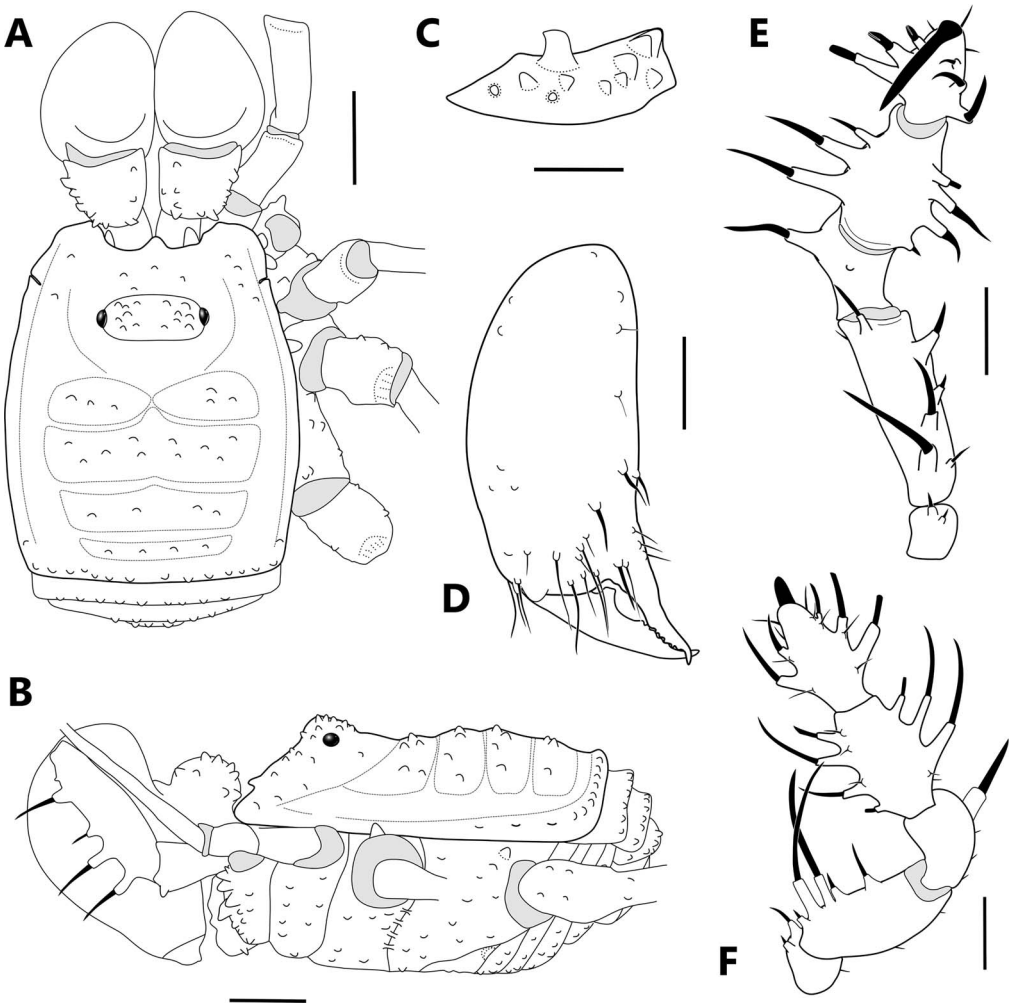

Figure 6.—Male holotype of *Vima panita* sp. nov. (ICN-AO-1884). Habitus. A. Dorsal view, B. Lateral view, C. Coxa I, ventral view, D. Chelicera, frontal view, E. Pedipalp, mesal view, F. Same, ectal view. Scale bars: 0.5 mm.

(Fig. 6D). Fixed finger with the inner surface finely grooved. Movable finger with one trapezoid, sub-basal tooth and with the inner surface at distal portion dentate (Fig. 6D).

Pedipalps: Trochanter ventrally with two subapical tubercles. Femur with a ventroectal row of four setiferous tubercles, the two basalmost larger than the others, and one medium ventromesal setiferous tubercle in the apical portion (Figs. 6E, F). Patella with one large mesal setiferous tubercle. Tibia ectal iIIi, mesal IIi. Tarsus ectal III, mesal III (Figs. 6E, F).

Legs: Leg I filiform, legs I–IV straight and smooth (Figs. 5A, B). Leg IV thicker than the others; Fe IV length four times DS length (Fig. 5A). Ta IV without tarsal process, claws smooth. Tarsal formula: Holotype ♂ (ICN-AO-1884): 9/14/7/8; 2♂ 2♀ Paratypes (MNRJ 60286): 7/14/7/7.

Penis: Lamina parva (LP) small and depressed, crescent shaped, with anterolateral sharp corners apically pointed (Figs. 7B, C). Malleus (Ma) carrying the branched MS A and MS B in an oblique disposition: 2 pairs of MS A (MS A1 on laterodistal region and MS A2 on dorsoproximal region) and 1 pair of ventroapical MS B (Figs. 7A–C). MS C absent. Two pairs of short MS D close together (MS D1 and MS D2) located in the junction of the LP and the Ma, close to the base of the stylus (Figs. 7A, B). MS E on the ventral side of the LP: 1 pair of MS E1 short and conical and 1 pair of MS E2 large and trifid, been MS E1 located slightly anterior to MS E2 (Fig. 7C). Stylus elongated, mostly straight (curved dorsally at the apex), with an index finger-like process in the tip (indicated with an asterisk), surpassing the apical border of the LP (Fig. 7A). Stylus linked to an acuminate dorsal process (DP) by a dorsal keel (Figs. 7A, B) that exhibits a tiny projection in its middle part (white arrow in Fig. 7C).

Color (in alcohol): Carapace Deep Brown (56). Lateral borders of dorsal scutum and free tergites Dark Brown (59). Chelicerae and legs I–IV Dark Brown (59) (Fig. 5B). Pedipalpal segments of different colors: trochanter, femur and tarsus Dark Brown (59), patella and tibia Yellowish White (92) (tibiae with a dorsal spot Dark Brown (59)) (Figs. 5B–E).

Sexual dimorphism: Female with chelicera not hypertelic, DS higher at areas II–III level.

Distribution.—*Vima panita* is known only from Florencia (Caquetá department), Colombia (Fig. 8), from 280 m to 380 m a.s.l., in WWF ecoregion NT0142 (Napo moist forests).

Etymology.—The Spanish word *panita* (diminutive of *pana*) means "friend" in Venezuela and some Caribbean countries. It

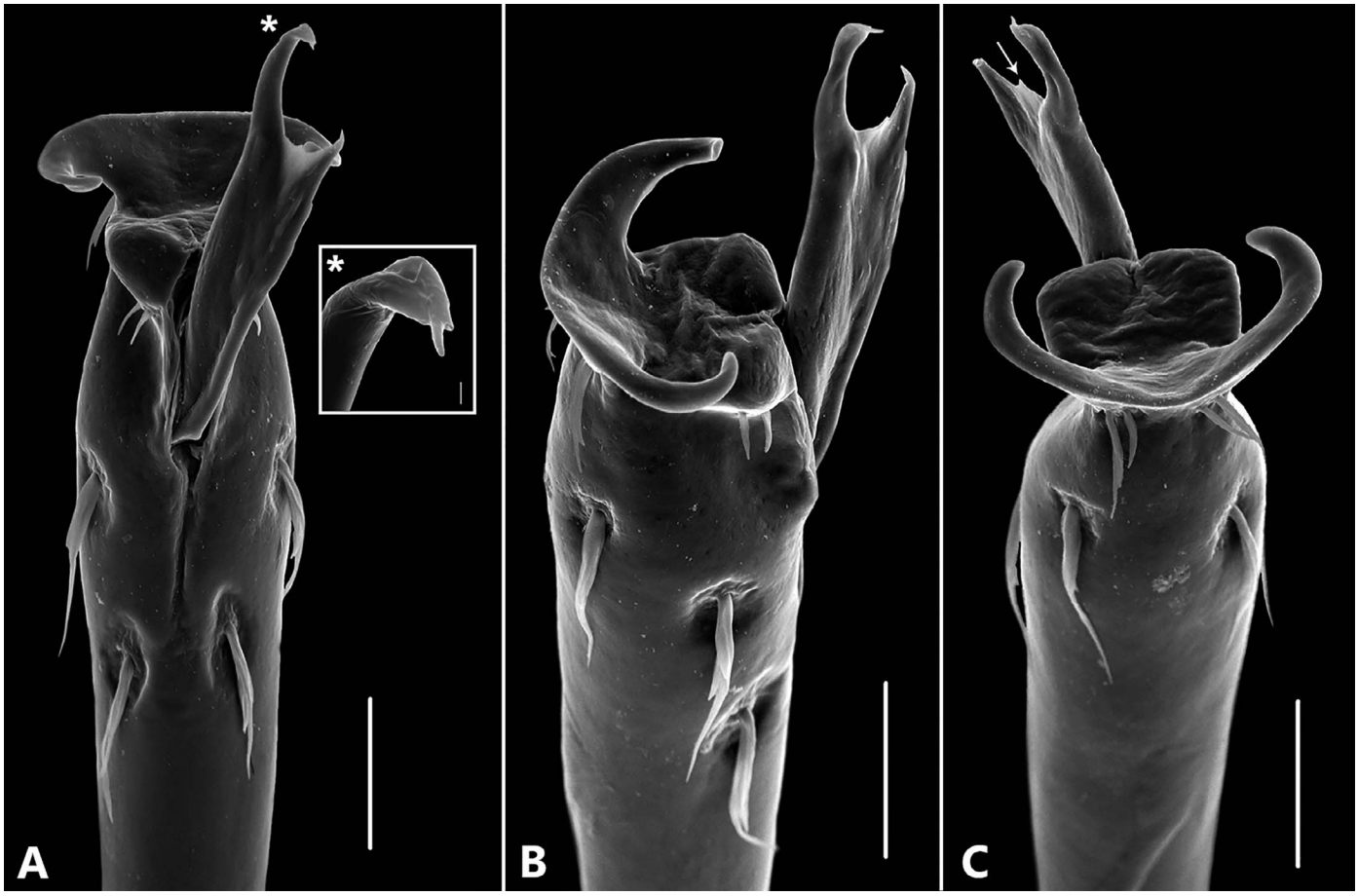

Figure 7.—Scanning Electron Micrograph images of *Vima panita* sp. nov. (ICN-AO-1885) male genitalia. A. Dorsal view, showing a detail of the tip of stylus (*), B. Lateroapical view, C. Ventroapical view (arrow indicating a tiny projection of the laminar expansion). Scale bars: 50 um, detail (*) = 2 um.

is dedicated to our Venezuelan colleague Osvaldo Villarreal for his valuable contributions to the knowledge of the Neotropical harvestmen. It is to be treated as a noun in apposition.

DISCUSSION

The diversity of Leiosteninae is underestimated, especially in view of the great number of undescribed species from Colombia, Ecuador and Venezuela that have been recently detected (García unpublished data). Regrettably, all of this material was lost in the fire of the Museu Nacional (Kury et al. 2018) with just a fraction of the specimens photographed (Fig. 2) or explored by SEM (Fig. 3). However, by means of new expeditions, we aim to gradually retrieve and describe part of that diversity, as in the case of *Vima panita* sp. nov. and other agoristenids.

Male genitalia.—Pinto-da-Rocha (1996:316), when describing the penis of *Vima insignis*, stated that it has "…3 pairs of single seta above trifids...", referring to MS D. Nevertheless, the dorsal drawing of the genitalia (fig. 9) shows a disparity in MS D quantity: left side with two MS D and right side with three MS D. According to Kury & Villarreal (2015:23), Agoristenidae typically possess two pairs of reduced MS D and curiously, sometimes asymmetry (Fig. 2D), that led us to infer that the studied penis of *V. insignis* has a supernumerary MS D (MS Ds in Fig. 4). It is important to say that the examined male of *V. insignis* (NHMUK) was already dissected, but without the penis alongside the body of the specimen and, according with the labels, it was mounted by María Rambla on a slide (Figs. 1E, F). Mounting the genitalia on a slide and squeezing it could interfere in the interpretation of some genital structures.

On the other hand, Kury (1997:338) made a remark in the diagnosis of Agoristenidae: "… there is a structure that occurs only in *Vima* and *Barinas* that could be interpreted by some as a dorsal process of glans penis (see Gonzalez-Sponga 1987:455, fig. 577). I regard it as the longitudinal keel that has become detached from the stylus, and therefore not homologous to the dorsal process which occurs in other families…". He was referring to the dorsal process (DP) of the stylus of *Barinas flava* Gonzalez-Sponga, 1987 (the only species of *Barinas* Gonzalez-Sponga, 1987), which is also present in *V. insignis* (Fig. 4). Besides that, *Vimina virginis* Gonzalez-Sponga, 1987 (the only species of *Vimina* Gonzalez-Sponga, 1987) possess a DP linked to the stylus by a dorsal keel (Gonzalez-Sponga 1987: fig. 718), as also seen in *V. panita* (Fig. 7). However, although we note that the DP is present in

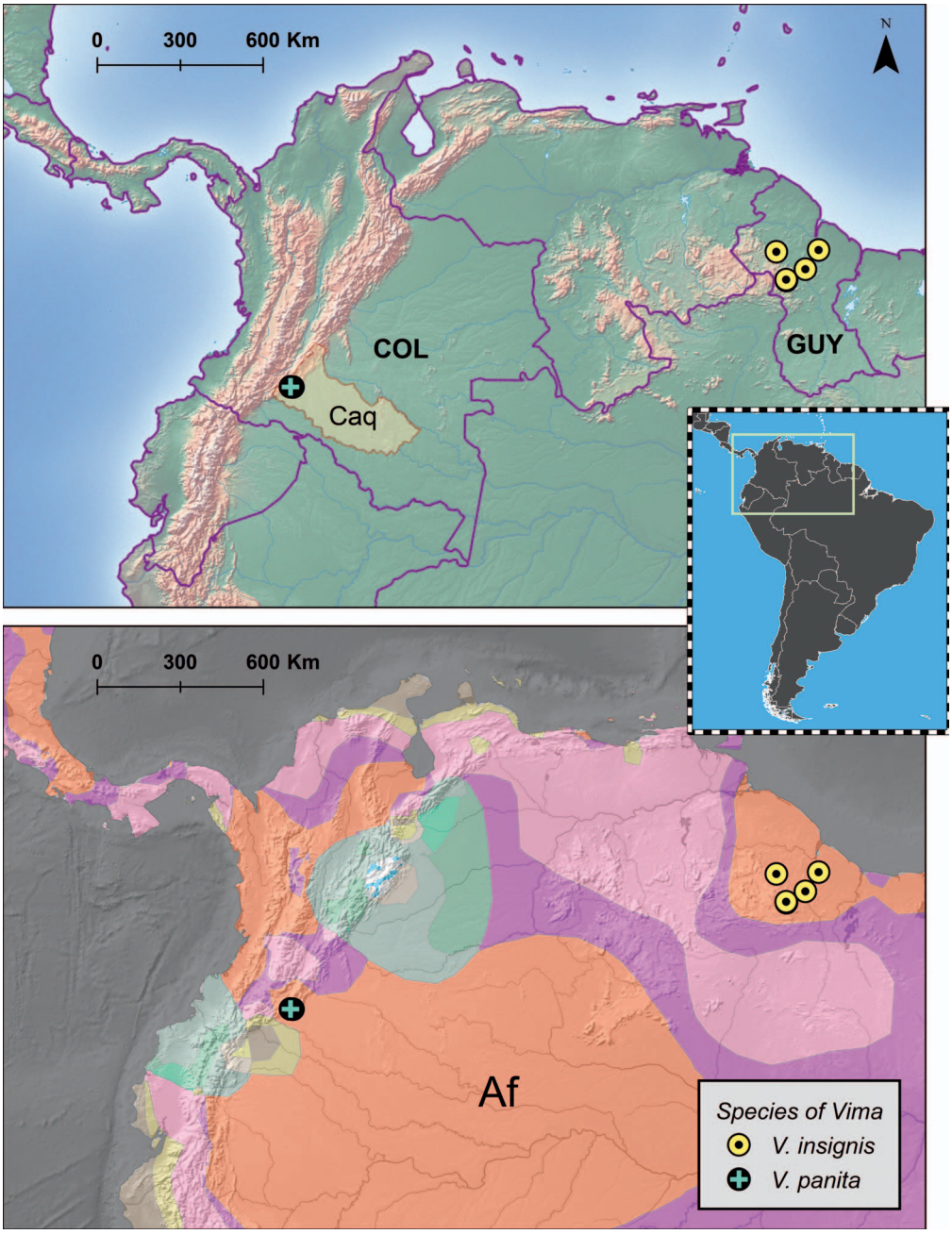

Figure 8.—Northwestern South America showing the distribution of *Vima insignis* and *Vima panita* sp. nov. A. Hypsographic background with country borders and Caquetá department shaded. B. Topographic background with Köppen-Geiger climate zones as colored areas. Abbreviations: Af = Tropical rainforest climate; Caq = Caquetá department; COL = Colombia; GUY = Guyana.

Barinas, *Vima* and *Vimina*, its phylogenetic signal still has to be determined by a cladistic analysis.

Geographic distribution.—The disconnected distribution of *Vima* in Guyana and Colombia, with a large intervening stretch (Fig. 8) may be a subsampling artifact, rather than a true disjunction. Although many species have been assigned to *Vima* over the years, today there are only two "true" *Vima*. Both species share the Tropical rainforest climate type (Af in Köppen-Geiger climate system), with precipitation of the driest month at least 60 mm (Peel et al. 2007). This distribution allows predicting future discoveries of further *Vima* that bridge this wide gap within the Af zone. It is too early to understand the distribution patterns of Leiosteninae, especially because the taxonomy is poorly resolved, with many incorrect generic assignments (unpublished data).

Today, two decades after the first phylogenetic analysis of Agoristenidae, the relationships among its genera are more firmly established. However, there are gray zones such as the diverse, widespread and artificial genus *Avima*. The present discovery of a second species of "true" *Vima* far from the area of occurrence of the first one is strongly suggestive of an extensive gap in our knowledge of Amazonian leiostenines. Any future

efforts to unveil this diversity are hindered by: (1) the actions of the present Brazilian government, which is wholesale devastating the Amazon forest, (2) the recent removal of the Colombian guerilla and paramilitary militias, which allowed logging, agriculture and cattle raising activities access to hitherto untouched Amazonian areas. It is therefore a race against time to make those species known before they are destroyed.

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