

Article

On the Tarantula Genus *Xenesthis* Simon, 1891, with Description of a New Species from Venezuela (Araneae: Theraphosidae) [†]

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urn:lsid:zoobank.org:act:CD285B36-B899-41FA-884B-0A120DB76D71.

Abstract: The type material of *Xenesthis colombiana* Simon, 1891, *X. immanis* Ausserer, 1875, and *X. monstrosa* Pocock, 1903, are redescribed, with additional specimens of *X. colombiana* recorded. A neotype is designated for *Xenesthis intermedia* Schiapelli and Gerschman, 1945, as the holotype is lost; the female is redescribed, and the male is described for the first time. A new species, *Xenesthis avanzadora* sp. nov., is described from Venezuela based on a holotype male.

Keywords: taxonomy; morphology; museums; spider; Colombia; Venezuela; theraphosid



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1. Introduction

Simon [1] described the genus *Xenesthis* Simon, 1891, to house a new species, *Xenesthis colombiana* Simon, 1891, from a single male allegedly from Panama, though the species name suggested otherwise (see Gabriel and Sherwood [2]). Prior to Simon [1], Ausserer [3] had previously described *Lasiadora immanis* Ausserer, 1875, from the female, and this species was transferred to *Xenesthis* by Pocock [4] in 1901. In the same work, Pocock [4] synonymized *X. colombiana* with the newly combined *X. immanis*, considering Simon's male to be the missing (male) sex of Ausserer's (female) taxon, but without providing any detailed explanations. A later-acquisitioned male specimen in the Muséum National d'Histoire Naturelle, Paris (MNHN), from Colombia, specifically in the Eugène Simon collection, was determined as *X. immanis* by Simon (pers. obs.), seemingly acknowledging the synonymy established by Pocock (1901), but outside of a printed publication. Since 1901, no author has disputed that *X. immanis* is known both from the male (i.e., the holotype of *X. colombiana*) and the female (i.e., the holotype of *X. immanis*).

A further species, *Xenesthis monstrosa* Pocock, 1903, was described (as *Xenesthis monstrosus*) two years after Pocock's synonymy of *X. colombiana* and *X. immanis* based on a single female with the type locality New Granada (= modern-day Colombia and parts of present-day Ecuador, Panama, and Venezuela) and differentiated on the basis of comparative lengths of legs I and IV against the length of the carapace [5]. In the same work, Pocock [5] cites the prior *X. colombiana* and *X. immanis* synonymy and stated that he examined additional specimens of *X. immanis* from "Bogota in Colombia (Keyserling Coll. and L. Greening), and Tachiro (Tachira) in Venezuela (Mr. Higgins)". Later, in the same portion of text, Pocock mentions examining a further two specimens but does not provide further details of their origins.

Forty-two years elapsed until the publication of the next taxonomic work on *Xenesthis*. Schiapelli and Gerschman [6] described a third species, *Xenesthis intermedia* Schiapelli and Gerschman, 1945 (as *Xenesthis intermedius*), from La Unión, Department of Escuque, Venezuela. Schiapelli and Gerschman [6] separated *X. intermedia* from congeners following the morphometrics used in Pocock (1903). It would be another 34 years until *Xenesthis* would be examined again, also by the same authors. Schiapelli and Gerschman [7] provided a diagnosis for the genus and stated that *X. immanis* was found in Central America, probably based on the unverified assumption that the then-synonymous *X. colombiana* occurred in Panama.

Over fifty years later, Gabriel and Sherwood [2] reversed the synonymy of *X. colombiana* with *X. immanis* and rejected the distribution of *X. colombiana* in Panama, as Panama does not appear on any of the data labels of the examined *Xenesthis* specimens in the MNHN. The World Spider Catalog [8] consequently recognizes four valid species in the genus *Xenesthis*: *X. colombiana* and *X. monstrosa* from Colombia, *X. immanis* from Colombia and Venezuela, and *X. intermedia* from Venezuela, all of which are presently known only from a single sex.

In this work, we review *Xenesthis*, redescribing all original types except that of *X. intermedia* which is lost. A neotype is designated for *X. intermedia*, allowing for the description of the male for the first time [6], supplemented with a description of a non-type female. The presence of additional appendages in the jar containing the holotype of *X. immanis* is discussed. A new species, *X. avanzadora* sp. nov., is described from Venezuela.

2. Materials and Methods

Specimens were examined under binocular microscopes. Photographs of palpal bulbs and tibial apophyses were taken using a Leica M125C auto-montage by R.G. and those of spermathecae by D.S. with a Canon EOS 6D Mark II attached to a Leica MZ12.5 stereomicroscope, with images stacked using Helicon Focus. Habitus and labels were made by DS using an Olympus TG-6 and RG with a Fuji Finepix S4000. All plates were assembled by DS. Description style follows Sherwood et al. [9]. Abbreviations, Institutes: BMNH = Natural History Museum, London, United Kingdom; MACN = Museo Argentino de Ciencias Naturales “Bernardino Rivadavia”, Buenos Aires, Argentina; MNHN = Muséum National d’Histoire Naturelle, Paris, France; OUMNH = Oxford University Museum of Natural History, Oxford, United Kingdom; ZMH = Zoologisches Institut und Zoologisches Museum, Hamburg, Germany. Structures: ALE = anterior lateral eyes, AME = anterior median eyes, AT = apical tubercle (of tibial apophysis), D = ventral median depression, PLE = posterior lateral eyes, PME = posterior median eyes; PB = prolateral branch (of tibial apophysis), RB = retrolateral branch (of tibial apophysis). Leg spine terminology follows Petrunkevitch [10] with the modifications proposed by Bertani [11]: d = dorsal, v = ventral, r = retrolateral, p = prolateral. Palpal bulb terminology: A = apical keel, AC = accessory keel, DEH = dorsal embolic hump, ER = embolic ridge, PAc = prolateral inferior keel, PAR = prolateral apical ridge, PC = prolateral crease, PI = prolateral inferior keel, PR = prolateral ridge, PS = prolateral superior keel, RI = retrolateral inferior keel, RS = retrolateral superior keel, SA = subapical keel, TH = tegular heel. Other: coll. = collector; colln. = collection; det. = determined by. Leg formulae start with the longest leg to the shortest in order of decreasing size, e.g., 4,1,2,3. Urticating setae’s terminology follows Cooke, Roth and Miller [12]. Extent of metatarsal scopulae is measured as a percentage, using the total length of the scopulae ventrally only (measured from start at base of metatarsus to most proximal extent of scopula), divided by the total ventral length of the metatarsus itself. All measurements are in mm.

3. Results

Xenesthis Simon, 1891

Lasiodora: Ausserer, 1875: 194 (in part) [3]

Xenesthis Simon, 1891: 332 [1]

Xenesthis: Pocock, 1901: 546 [4], 1903: 93 [5]; Schiapelli and Gerschman, 1945: 188 [6], 1979: 298 [7]; Smith, 1987: 164 [13], 1989: 15 [14]; Pérez-Miles et al., 1996: 60 [15]; Schmidt, 1997: 20 [16]; Bertani, 2001: 337 [11], Schmidt, 2003: 138 [17], Gabriel and Sherwood, 2022: 16 [2]

Type species: *Xenesthis colombiana* Simon, 1891, by original designation [1].

Diagnosis: *Xenesthis* is readily distinguished from all other theraphosines by the presence of scopulae on the retrolateral and retrolatero-dorsal faces of metatarsus IV in addition to the ventral face (scopulae absent on retrolateral and retrolatero-dorsal faces of metatarsus IV, found only ventrally in all other known theraphosine genera). Further, males differ from all other known theraphosines through the unique presence of two prolateral spermatic pores (Figures 1A, 5A, 9A and 11A) (only one prolateral spermatic pore present in all other known theraphosinae genera) and further from the closely related *Pamphobeteus* by the presence of a subapical keel, dorsal embolic hump, and a weakly developed ventral median depression (subapical keel, dorsal embolic hump, and ventral median depression absent in *Pamphobeteus*). Additionally, males of *Xenesthis* resemble those of *Abdomegaphobema* and *Megaphobema* in the combination of a spatulate embolus and comparatively similar morphology of the prolateral keels [1]. However, males of *Xenesthis* can be differentiated from both genera via the presence of a subapical keel, dorsal embolic hump, weakly developed ventral median depression, and the prolateral superior keel only partially or not at all fused with the apical keel (subapical keel, dorsal embolic hump, and ventral median depression absent, and prolateral superior keel completely fused with the apical keel in *Abdomegaphobema* and *Megaphobema*).

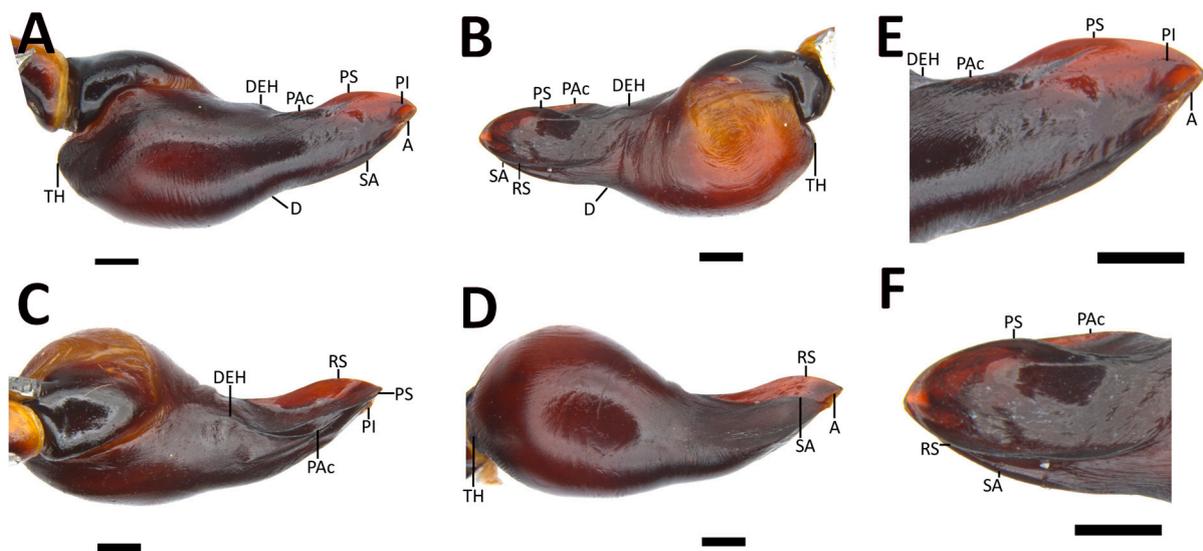


Figure 1. *Xenesthis avanzadora* sp. nov. holotype male (BMNH), palpal bulb, (A) prolateral view; (B) retrolateral view; (C) dorsal view; (D) ventral view; (E) close-up of embolus in prolateral view; (F) close-up of embolus in retrolateral view. Scale bars = 1 mm. Photo credits: R. Gabriel. Abbreviations: A = apical keel, D = ventral median depression, DEH = dorsal embolic hump, PAC = prolateral accessory keel, PI = prolateral inferior keel, PS = prolateral superior keel, RS = retrolateral superior keel, SA = subapical keel, TH = tegular heel.

Distribution: Colombia and Venezuela.

Remarks: We newly propose the term dorsal embolic hump (DEH) to refer to the raised area found dorsally immediately behind the basal emergence of the embolus. This feature is present in all *Xenesthis* males examined to date and seems to be a further feature to separate it from other genera, although it must first be assessed if this character can be found in other taxa. We also note that we have found the extent of metatarsal scopulae useful at the generic level but not at the species level.

The presence of two spermatic pores is unique. One pore is located directly below the PI whereas the other is situated below the first pore, closer to the apical keel. The internal duct could represent a bifurcated duct or an apically enlarged duct that covers both pores; which of these is correct is not discernible from light microscopy without a major and destructive dissection (unacceptable for type specimens). The examination of the anatomy of this structure requires a much more detailed examination, preferably incorporating SEM, which is outside the scope of this work. Nonetheless, we newly report this feature here because its presence has taxonomic value in delineating the genus. By reporting this feature, we hope it shall encourage future workers to investigate its functional morphology using non-type specimens.

Species included: *X. avanzadora* sp. nov., *X. colombiana*, *X. immanis*, *X. intermedia*, *X. monstrosa*

Xenesthis avanzadora sp. nov.

Zoobank: urn:lsid:zoobank.org:act:CD285B36-B899-41FA-884B-0A120DB76D71.

Type material: Holotype ♂ (BMNH 1954.6.8.1), Casigua, El Cubo (8°45' N, 72°32' W), Jesús Maria Semprúm, Estado Zulia, Venezuela, coll. J. F. T. Turner.

Diagnosis: *Xenesthis avanzadora* sp. nov. can be distinguished from *X. colombiana* and *X. intermedia* via the well-developed retrolateral superior keel (retrolateral superior keel developed in *X. colombiana* and *X. intermedia*), width of basal third of embolus noticeably narrower than the apical third (basal third only slightly narrower than apical third in *X. colombiana* and *X. intermedia*), and the well-developed dorsal embolic hump (dorsal embolic hump weakly developed in *X. colombiana*, developed in *X. intermedia*). Further distinguished from *X. colombiana* by the upwardly angled embolus and weakly developed apical keel (embolus almost straight and apical keel developed in *X. colombiana*).

Etymology: The specific epithet is a noun in apposition, honouring Juana Ramírez (1790–1856), known in Venezuela as “La Avanzadora”, an Afro-Venezuelan artillery officer and heroine of Venezuelan independence, renowned for her ability to advance her unit under heavy fire towards Spanish occupiers.

Description of holotype male: total length including chelicerae: 67.2. Carapace: length 27.5, width 25.3. Caput: slightly raised. Ocular tubercle: raised, length 3.3, width 4.2. Eyes: ALE > AME, AME > PLE, PLE > PME, anterior eye row procurved, posterior row slightly recurved. Clypeus: narrow. Clypeal fringe: long. Fovea: deep, transverse. Chelicera: length 13.5, width 5.7. Abdomen: length 25.0, width 19.4. Maxilla (left-hand side): between 70 and 80 cuspules covering approximately 57% of the proximal edge. Labium: length 3.0, width 4.1, with 65–70 cuspules mostly separated by 0.5–1.0 times the width of a single cuspule. Labio-sternal mounds: separate. Sternum: length 14.0, width 10.9, with three pairs of sigilla. Tarsi I–IV fully scopulate. Metatarsal scopulae: I 86%; II 88%; III 96%; IV 100%. Lengths of legs and palpal segments: see Table 1, legs 4,1,2,3. Spination: palp d 0–0–1, patella II p 0–0–1, III p 0–0–1, IV p 0–0–1, r 0–0–1, tibia I v 0–1–0, II v 0–0–2, III d 2–2–1, v 0–1–3, IV d 1–1–2, v 1–1–5, palp p 0–0–3, r 0–1–0, metatarsus I v 0–0–3 (apical), II v 0–0–3, III d 1–0–1, v 2–1–6 (5 apical), IV d 1–1–1, v 3–2–10 (7 apical). Tibia I with paired tibial apophysis, RB longer than PB, each with a single megaspine with pointed apex situated prolaterally, AT present on RB (Figure 2A–C). Femur III: slightly incrassate. Palpal tibia: unmodified. Palpal cymbium: unmodified. Metatarsus I: unmodified. Posterior lateral spinnerets with three segments, basal 2.8, median 3.1, digitiform apical 5.3. Posterior median spinnerets with one segment. Palpal bulb with TH weakly developed; width of apical third of embolus noticeably narrower than apical third, embolus angled upwards; DEH well-developed; D weakly developed; PS, Pac, and SA developed; PI and A weakly developed; RS well-developed; ER, PR, and PAR absent; PC present; constricted in apical quarter (Figure 1A–F). Urticating setae: Type I present dorsally. Stridulation organ femur IV with pad of plumose stridulatory setae on retrolateral face, lateral opisthosoma with stout setae in area brushed by retrolateral femur IV. Colour: alcohol preserved brown (Figure 3).

Table 1. *Xenesthis avanzadora* sp. nov. holotype female (BMNH 1954.6.8.1), podomere lengths.

	I	II	III	IV	Palp
Femur	25.8	23.8	22.7	27.3	15.3
Patella	13.0	12.5	11.6	12.6	9.2
Tibia	19.7	18.7	16.6	20.9	14.1
Metatarsus	22.9	22.0	13.4	34.4	–
Tarsus	14.4	13.7	12.8	16.2	5.7
Total	95.8	90.7	77.1	111.4	44.3

**Figure 2.** *Xenesthis avanzadora* sp. nov. holotype male (BMNH), tibial apophysis, (A) prolateral view; (B) ventral view; (C) retrolateral view. Scale bars = 1 mm. Arrow indicates AT. Photo credits: R. Gabriel.**Figure 3.** *Xenesthis avanzadora* sp. nov. holotype male (BMNH), habitus of specimen, and data labels. Scale bar = 50 mm. Photo credit: D. Sherwood.

Female: Unknown.

Distribution: Known only from the type locality, Casigua, Estado Zulia, Venezuela.

Xenesthis colombiana Simon, 1891

Xenesthis colombiana Simon, 1891: 333. [1]

Xenesthis immanis: Pocock, 1901: 546. [4]

Xenesthis colombiana: Gabriel and Sherwood, 2022: 16. [2]

Type material: Holotype ♂ (MNHN AR-4801), Colombia, E. Simon colln., examined.

Diagnosis: *Xenesthis colombiana* can be distinguished from *X. avanzadora* sp. nov. and *X. intermedia* by the weakly developed dorsal embolic hump, developed apical keel, and the embolus angled almost straight (dorsal embolic hump developed (*X. intermedia*) or well-developed (*X. colombiana*); apical keel weakly developed, and embolus angled upwards in both *X. colombiana* and *X. intermedia*). Further distinguished from *X. avanzadora* sp. nov. by the developed retrolateral superior keel and width of basal third of embolus only slightly narrower than apical third (retrolateral superior keel well-developed and basal third noticeably narrower than apical third in *X. avanzadora* sp. nov.).

Redescription of holotype male (MNHN AR-4801): total length including chelicerae: 81.7. Carapace: length 33.0, width 32.2. Caput: slightly raised. Ocular tubercle: raised, length 3.3, width 4.9. Eyes: ALE > AME, AME > PLE, PLE > PME, anterior eye row procurved, posterior row slightly recurved. Clypeus: narrow; clypeal fringe: long. Fovea: deep, slightly recurved. Chelicera: length 14.6, width 7.7. Abdomen: length 34.1, width 23.0. Maxilla (left-hand side): between 120 and 150 cuspules covering approximately 65% of the proximal edge. Labium: length 5.0, width 5.0, with 70–80 cuspules mostly separated by 1.0–> 1.0 times the width of a single cuspule. Labio-sternal mounds: separate. Sternum: length 14.5, width 10.9, with three pairs of sigilla. Tarsi I–IV fully scopulate. Metatarsal scopulae: I 100%; II 95%; III 98%; IV 100%. Lengths of legs and palpal segments: see Table 2, legs 4,1,2,3. Spinination: femur III d 0–0–1, patella III p 0–0–2, r 0–0–2, tibia II v 1–1–1, III d 2–2–1, v 0–2–4, IV d 2–4–5, v 2–2–4, palp v 2–2–1, p 2–1–2, metatarsus I v 0–0–1 (apical), II v 0–0–2 (apical), III v 1–0–3 (apical), IV d 2–3–4, v 3–5–5 (4 apical). Tibia I with paired tibial apophysis, RB longer than PB, each with a single megaspine with pointed apex, PB spine situated prolaterally, RB spine situated retrolaterally, AT present on RB. Femur III: slightly incrassate. Palpal tibia: unmodified. Palpal cymbium: unmodified. Metatarsus I: unmodified. Posterior lateral spinnerets (broken off, missing). Posterior median spinnerets with one segment. Palpal bulb with TH weakly developed; width of apical third of embolus only slightly narrower than apical third, embolus angled almost straight; D and DEH weakly developed; PS, Pac, A, SA, and RS developed; PI weakly developed, ER, PR, and PAR absent; PC present, constricted in apical quarter. Urticating setae: Type I present dorsally. Stridulation organ femur IV with pad of plumose stridulatory setae on retrolateral face, lateral opisthosoma with stout setae in area brushed by retrolateral femur IV. Colour: alcohol preserved brown (Figure 4A,B).

Table 2. *Xenesthis colombiana* Simon, 1891, holotype male (MNHN AR-4801), podomere lengths. * = missing segment, \geq = total length calculated based solely on measurements of known segments in each case and, thus, will differ from true total length.

	I	II	III	IV	Palp
Femur	33.5	27.3	25.2	30.7	18.5
Patella	14.8	14.4	13.4	14.0	11.1
Tibia	20.9	20.8	21.0	23.4	16.1
Metatarsus	25.0	24.5	23.6	38.4	–
Tarsus	*	13.7	12.9	14.5	6.9
Total	≥ 94.2	100.7	96.1	121.0	52.6

Palpal bulb and tibial apophysis of non-type male (MNHN AR-4800): Since MNHN does not allow the loaning of type material, we decided to use a conspecific non-type specimen (compared directly against the holotype) for the auto-montage imaging of sexual structures (Figures 5 and 6) to ensure this species was imaged in the United Kingdom to the same standards as other species. The non-type male matches exactly in palpal bulb and tibial apophysis morphology.

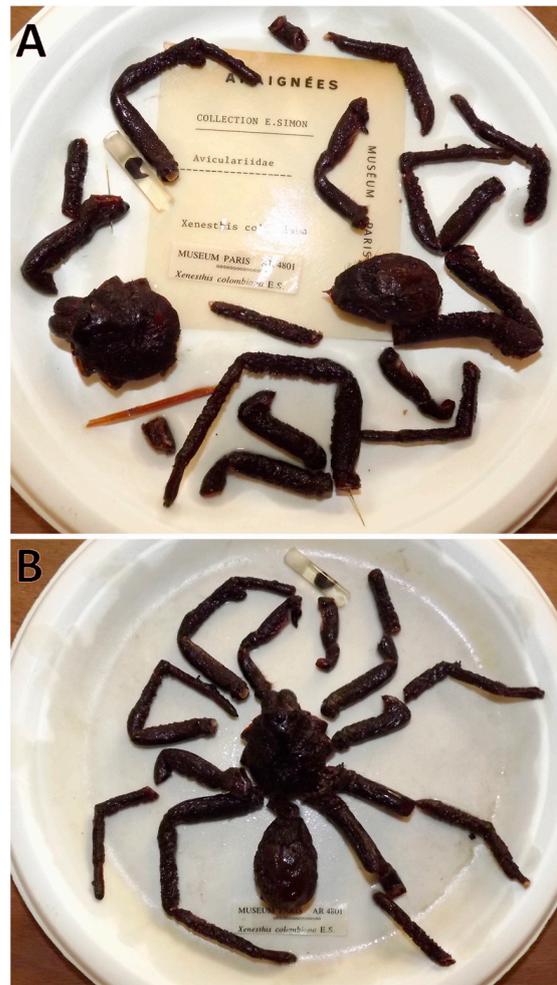


Figure 4. *Xenesthis colombiana* Simon, 1891, holotype male (MNHN AR-4801), (A) habitus as found removed from jar; (B) specimen with podomeres reconstructed. Photo credit: R. Gabriel.

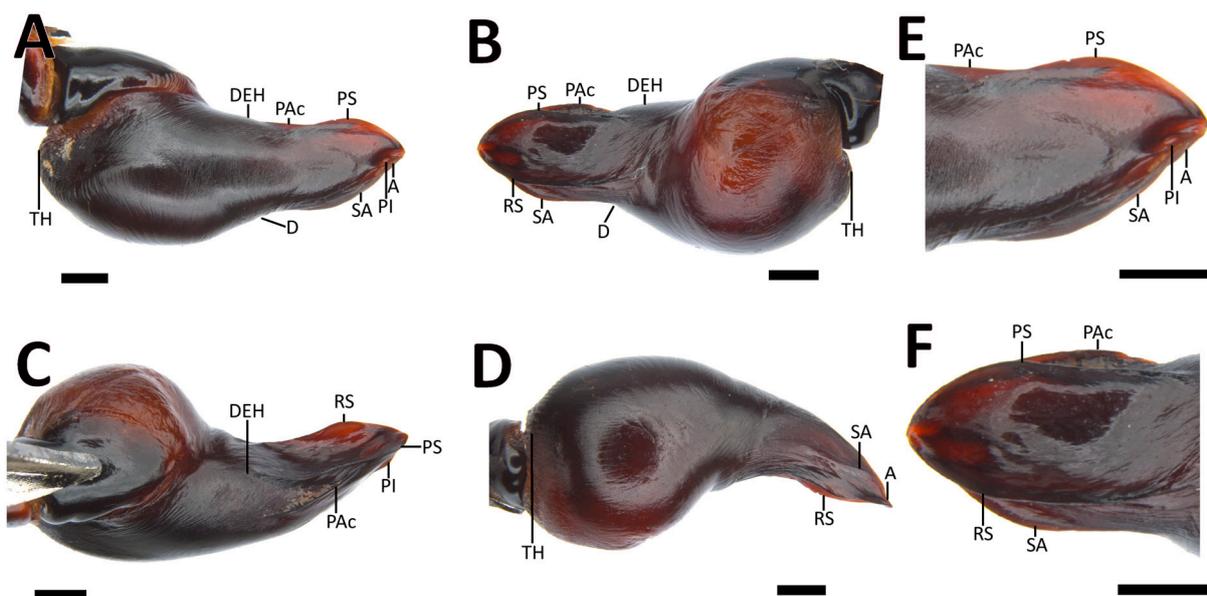


Figure 5. *Xenesthis colombiana* Simon, 1891, non-type male (MNHN AR-4800) palpal bulb, (A) prolateral view; (B) retrolateral view; (C) dorsal view; (D) ventral view; (E) close-up of embolus in prolateral view; (F) close-up of embolus in retrolateral view. Scale bars = 1 mm. Photo credits: R. Gabriel.



Figure 6. *Xenesthis colombiana* Simon, 1891, non-type male (MNHN AR-4800), tibial apophysis, (A) prolateral view; (B) ventral view; (C) retrolateral view. Scale bars = 1 mm. Arrow indicates AT.

Female: Unknown.

Other material examined: 1 ♂ (MNHN AR-4800), Mine Purnio, Colombia, “a Buenos Aires”; 1 ♂ (MNHN AR-4911), Bogota, Fr. Apollinmaire, 1918; 1 ♂ (BMNH 1897.11.22.1), Bogota, Fr. Greening; 1 ♂ (BMNH 1906.11.21.1), Demerara, British Guiana (dubious locality, likely port of export), C. Lund (p.).

Distribution: Province of Caldas, Colombia.

Xenesthis immanis (Ausserer, 1875)

Lasiadora immanis Ausserer, 1875: 194. [3]

Xenesthis immanis: Pocock, 1901: 546. [4]

Xenesthis immanis: Schiapelli and Gerschman, 1979: 298, fig. 32–38. [7]

Xenesthis immanis: Smith, 1987: 164, pl. 4, fig. 90h. [13]

Xenesthis immanis: Smith, 1989: 15, fig. 1–3. [14]

Xenesthis immanis: Pérez-Miles et al., 1996: 60, fig. 51–52. [15]

Xenesthis immanis: Schmidt, 1997: 20, fig. 215–216. [16]

Xenesthis immanis: Bertani, 2001: 337, fig. 149–152. [11]

Xenesthis immanis: Schmidt, 2003: 138, fig. 215–216. [17]

Type material: Lectotype (designated herein) ♀ (BMNH 1890.7.1.372), Bogota, Colombia, Keyserling colln., examined; paralectotype (designated herein) ♀ (BMNH 1890.7.1.372), (same data), examined.

Diagnosis: *Xenesthis immanis* can be distinguished from females of *X. intermedia* and *X. monstrosa* by the greater number of maxillary cuspules (150–170 vs. 90–100 in *X. intermedia* and 60–70 in *X. monstrosa*). Further differentiated from *X. monstrosa* by the total length value of leg IV exceeding three times the total length of the carapace (total length of leg IV not exceeding three times that of carapace in *X. monstrosa*).

Redescription of lectotype female: total length including chelicerae: 64.6. Carapace: length 28.6, width 25.5. Caput: raised. Ocular tubercle: slightly raised, length 2.8, width 3.6. Eyes: ALE > PLE, PLE > AME, AME > PME, anterior row procurved, posterior row recurved. Clypeus: narrow; clypeal fringe: long. Fovea: deep, transverse. Chelicera: length 13.4, width 7.5. Abdomen: length 22.6, width 15.0. Maxilla (left-hand side): between 150 and 170 cuspules, covering approximately 38% of proximal edge. Labium: length 3.2, width 3.6, with 45–50 labial cuspules most separated by 0.5–1.0 times the width of a single cuspule. Labio-sternal mounds: separate. Sternum: length 10.1, width 9.3, with three pairs of sigilla. Tarsi I–IV fully scopulate. Metatarsal scopulae: I 91%; II 88%; III 88%; IV 93%. Lengths of leg and palpal segments: see Table 3, legs 4,1,2,3. Spination: (not measured due to fragility). Posterior lateral spinnerets with three segments: basal 4.6, medial 4.3, digitiform apical 5.2. Posterior median spinnerets with one segment. Spermathecae with two receptacles, emergent from a large fused and sclerotized base, each receptacle with a single lobe at its apex, lobes asymmetrical (Figure 7A). Urticating setae: Type I present dorsally. Stridulation organ femur IV with pad of plumose stridulatory setae on retrolateral face, lateral opisthosoma with stout setae in area brushed by retrolateral femur IV. Colour: alcohol preserved brown (Figure 8).

Table 3. *Xenesthis immanis* (Ausserer, 1875) lectotype (designated herein) female (BMNH 1890.7.1.372), podomere lengths.

	I	II	III	IV	Palp
Femur	22.9	20.7	19.0	24.4	15.7
Patella	11.4	10.7	10.0	11.2	8.5
Tibia	16.3	14.7	13.5	18.0	11.9
Metatarsus	16.1	15.1	18.3	27.2	–
Tarsus	12.4	11.9	11.4	11.6	12.9
Total	79.1	73.1	72.2	92.4	49.0

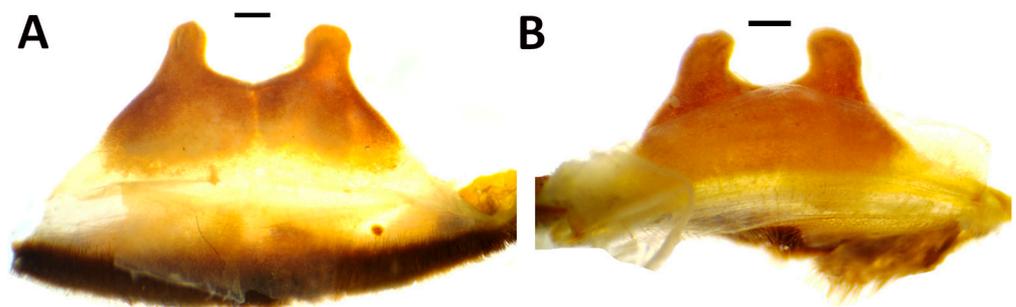


Figure 7. *Xenesthis immanis* Ausserer, 1875, spermathecae, dorsal view, (A) lectotype; (B) paralectotype. Scale bars = 1 mm. Photo credits: D. Sherwood.



Figure 8. *Xenesthis immanis* Ausserer, 1875, (A) lectotype and (B) paralectotype females, habitus of specimens and data labels, (C) leg I and palp of male found in the jar. Scale bars = 50 mm. Photo credits: D. Sherwood.

Male: Unknown.

Other material examined: 1 ♀(BMNH), Colombia, Koch colln., "*Acanthoscurria* sp.", *X. immanis* det. R. Gabriel 06.IX.08; 1 ♀(ZMH-A0000887), Venezuela, 1898, G. Urlan.

Distribution: Colombia and Venezuela.

Remarks: Ausserer [3] mentions examining two specimens of *X. immanis*, providing measurements and more precise morphological data for one female in the text (the other specimen also presumably a female, as it was not stated as male). In the jar containing the types of *X. immanis*, we found two female specimens which were conspecific and matched well with the original description. The specimen closer in measurements to the textual description of Ausserer (1875) is herein designated the lectotype (Figure 8A). The measurements of the second female also matched with that of the second specimen mentioned by Ausserer (1875), confirming that the specimen was indeed female; rendering it the paralectotype (Figure 8B), we figure its spermathecae here for completeness (Figure 7B). Both specimens were recurated by RG and DS into separate tubes within the jar and are clearly marked.

In addition to the two females in the jar, there is also a single left leg I and left palp and palpal bulb (Figure 8C) of a male *Xenesthis*. The morphology of the palpal bulb (Figure 9) and tibial apophysis (Figure 10) does not match any known *Xenesthis* species (cf. Figures 1, 5, and 11). However, Ausserer (1875) never described or explicitly mentioned a male specimen. The presence of only two appendages (leg I and the palp) is also very unusual. We cannot be sure that it is definitely the conspecific male of the females and, therefore, do not formally describe the male herein. Unless further evidence is uncovered, it is equally likely this specimen could have been from another locality but got mixed with the types by inadvertent error when a former curator of arachnids, Doug Clark, recurated the dried theraphosid type collection of the BMNH into alcohol in the 1960s and early 1970s.

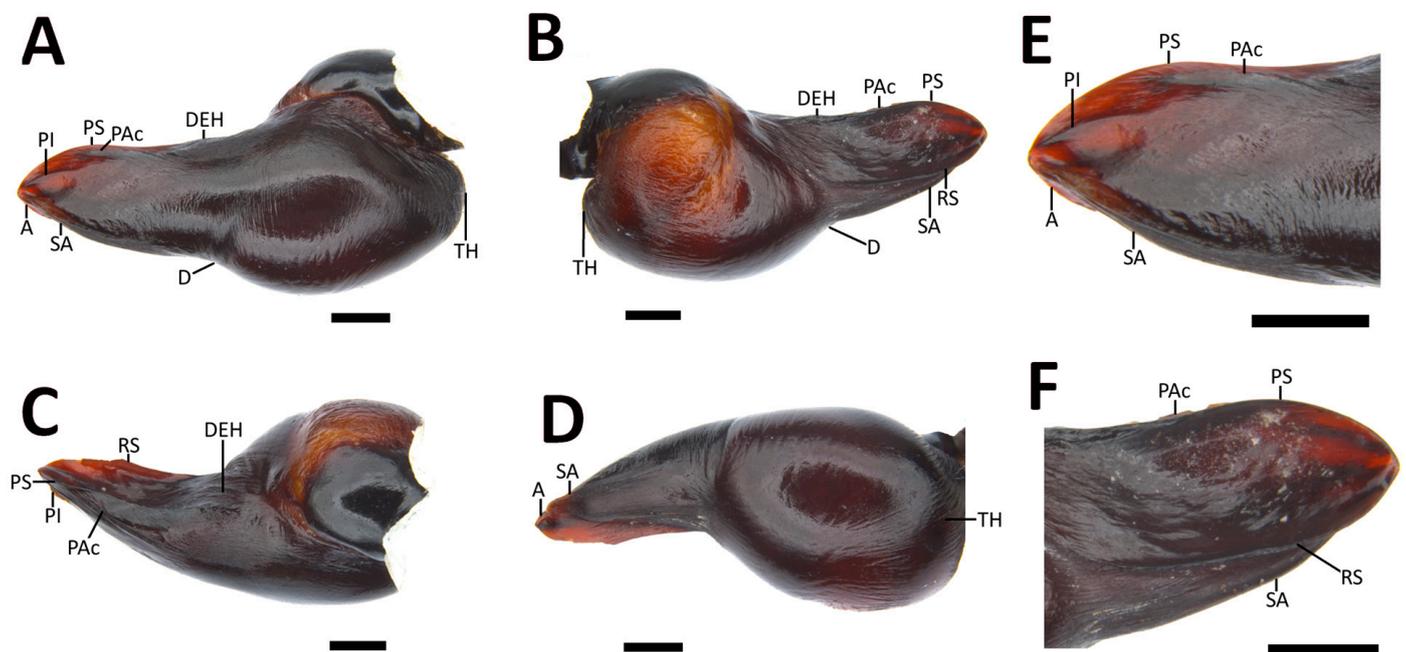


Figure 9. Palpal bulb from male found in jar with type specimens of *X. immanis*, (A) proximal view; (B) retrolateral view; (C) dorsal view; (D) ventral view; (E) close-up of embolus in proximal view; (F) close-up of embolus in retrolateral view. Scale bars = 1 mm. Photo credits: R. Gabriel.

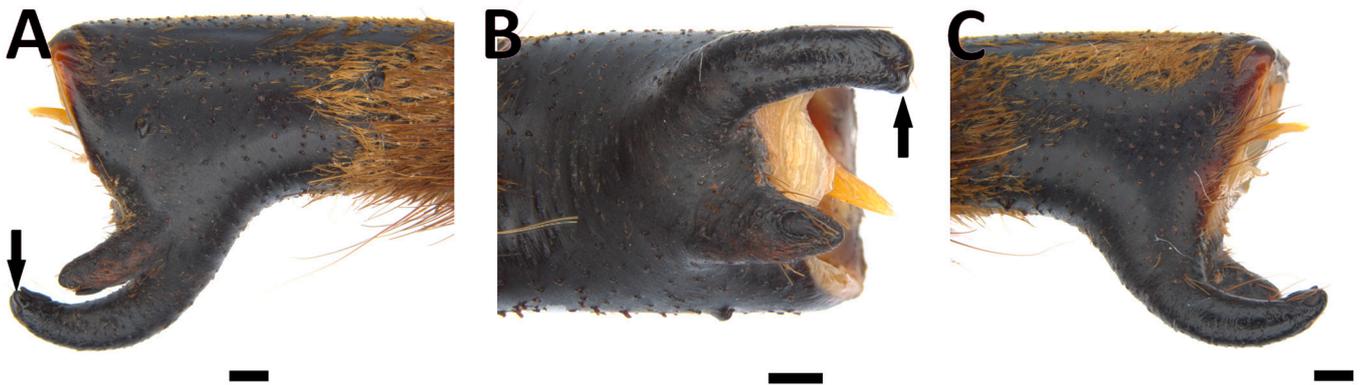


Figure 10. Tibial apophysis from male found in jar with type specimens of *X. immanis*, (A) prolateral view; (B) ventral view; (C) retrolateral view. Scale bars = 1 mm. Arrows indicate AT. Photo credits: R. Gabriel.

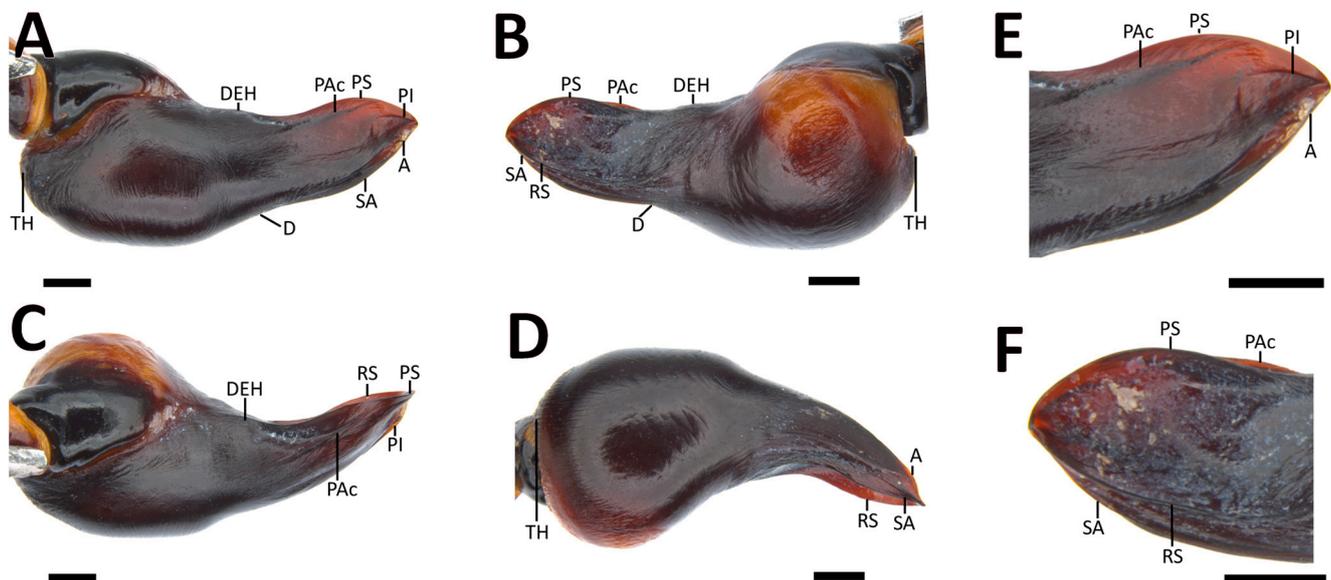


Figure 11. *Xenesthis intermedia* Schiapelli and Gerschman, 1945, neotype male (BMNH 1912.8.1.1), palpal bulb, (A) prolateral view; (B) retrolateral view; (C) dorsal view; (D) ventral view; (E) close-up of embolus in prolateral view; (F) close-up of embolus in retrolateral view. Scale bars = 1 mm. Photo credits: R. Gabriel.

Nonetheless, by illustrating the palpal bulb of the male *Xenesthis* sp. found in the jar with the type females, we hope this can assist future workers who may have access to more material from Colombia to ascertain whether it is indeed the male of *X. immanis* or whether it corresponds to a different species. It is worth noting that none of the existing male specimens in BMNH have a leg I and palpal bulb missing from the sample, so these structures originated from a now seemingly lost specimen.

Xenesthis intermedia Schiapelli and Gerschman, 1945

Xenesthis intermedius Schiapelli and Gerschman, 1945: 188, pl. XIV. [6]

Type material: Holotype ♀(MACN 841), La Unión, (9°15' N, 70°45' W), Department of Esuque, Venezuela, June 1936, coll. J. Vellard, not examined, lost; neotype (designated herein) 1 ♂(BMNH 1912.8.1.1), Mérida (8°35' N, 71°9' W), Estado de Mérida, Venezuela, examined (a second, non-type male, BMNH 1912.8.1.2, also present in sample).

Diagnosis: *Xenesthis intermedia* can be distinguished from males of *X. avanzadora* sp. nov. by the developed retrolateral superior keel, width of basal third of embolus only slightly narrower than apical third, and developed dorsal embolic hump (retrolateral

superior keel well-developed, basal third of embolus noticeably narrower than apical third, and dorsal embolic hump well-developed in *X. avanzadora* sp. nov.) and from *X. colombiana* by the weakly developed apical keel, developed dorsal embolic hump, and embolus angled upwards (apical keel developed, dorsal embolic hump weakly developed, and embolus almost straight in *X. colombiana*). Females can be distinguished from *X. immanis* by the lesser number of maxillary cuspules (90–100 vs. 150–170 in *X. immanis*) and from *X. monstrosa* by the greater number of maxillary cuspules and the total length value of leg IV exceeding three times the total length of the carapace (90–100 vs. 60–70 maxillary cuspules and total value of leg IV not exceeding three times that of carapace in *X. monstrosa*).

Description of neotype male: total length including chelicerae: 64.1. Carapace: length 27.7, width 25.8. Caput: slightly raised. Ocular tubercle: raised, length 2.9, width 3.6. Eyes: ALE > AME, AME > PLE, PLE > PME, anterior eye row procurved, posterior row slightly recurved. Clypeus: narrow; clypeal fringe: long. Fovea: (damaged, uninterpretable). Chelicera: length 11.3, width 5.5. Abdomen: length 25.1, width 16.5. Maxilla (left-hand side): between 70 and 80 cuspules covering approximately 59% of the proximal edge. Labium: length 2.5, width 3.5, with 35–40 cuspules mostly separated by 0.5–1.0 times the width of a single cuspule. Labio-sternal mounds: separate. Sternum: length 11.0, width 8.8, with three pairs of sigilla. Tarsi I–IV fully scopulate. Metatarsal scopulae: I 81%; II 85%; III 81%; IV 100%. Lengths of legs and palpal segments: see Table 4, legs 4,1,2,3. Spinination: femur palp d 0–0–1, patella III p 0–0–1, IV p 0–0–2, tibia I v 0–0–1, II d 0–1–1, v 2–2–3, III d 3–2–2, v 2–1–3, IV d 2–0–2, v 0–1–3, palp p 1–1–2, metatarsus I v 1–0–3, II d 1–0–1, v 1–1–4 (apical), III d 0–1–1, v 2–1–5 (apical), IV v 5–5–7 (5 apical). Tibia I with paired tibial apophysis, RB longer than PB, each with a single megaspine with pointed apex situated prolaterally, AT present on RB (Figure 12C). Femur III: slightly incrassate. Palpal tibia: slightly incrassate, otherwise unmodified. Palpal cymbium: unmodified. Metatarsus I: slightly curved, otherwise unmodified. Posterior lateral spinnerets with three segments, basal 4.1, median 3.0, digitiform apical 6.8. Posterior median spinnerets with one segment. Palpal bulb with TH weakly developed; width of apical third of embolus only slightly narrower than apical third, embolus angled upwards; DEH developed; D weakly developed; PS, Pac, RS, and SA developed; PI and A weakly developed; ER, PR, and PAR absent; PC present; constricted in apical quarter (Figure 11A–F). Urticating setae: Type I present dorsally. Stridulation organ femur IV with pad of plumose stridulatory setae on retrolateral face, lateral opisthosoma with stout setae in area brushed by retrolateral femur IV. Colour: alcohol preserved brown (Figure 13).

Table 4. *Xenesthis intermedia* Schiapelli and Gerschman, 1945, neotype male (BMNH 1912.8.1.1), podomere lengths.

	I	II	III	IV	Palp
Femur	25.4	23.1	21.8	26.1	15.4
Patella	12.8	12.3	10.8	13.1	9.2
Tibia	19.4	18.5	17.9	19.7	13.4
Metatarsus	22.5	21.3	25.1	35.5	–
Tarsus	14.8	15.1	14.1	14.1	5.7
Total	94.9	90.3	89.7	108.5	43.7

Description of non-type female: total length including chelicerae: 82.1. Carapace: length 33.5, width 26.0. Caput: raised. Ocular tubercle: slightly raised, length 2.8, width 4.4. Eyes: ALE > PLE, PLE > AME, AME > PME, anterior row procurved, posterior row recurved. Clypeus: narrow; clypeal fringe: long. Fovea: deep, transverse. Chelicera: length 15.9, width 8.1. Abdomen: length 32.7, width 28.2. Maxilla (left-hand side): between 90 and 100 cuspules, covering approximately 53% of proximal edge. Labium: length 3.5, width 3.9, with 55–60 labial cuspules most separated by 0.5–1.0 times the width of a single

cuspsule. Labio-sternal mounds: separate. Sternum: length 12.7, width 8.6, with three pairs of sigilla. Tarsi I–IV fully scopulate. Metatarsal scopulae: I 100%; II 87%; III 87%; IV 88%. Lengths of leg and palpal segments: see Table 5, legs 4,1,2,3. Spination: palp d 0–0–1, patella I p 0–0–1, II p 0–0–1, III p 0–0–1, IV p 0–0–1, tibia I v 0–0–3, II v 1–1–3, III d 0–3–0, v 0–3–3, IV d 3–2–1, v 0–1–3, palp v 1–2–4, r 0–1–1, metatarsus I v 0–0–4 (apical), II v 1–0–2 (apical), III d 1–1–0, v 6–2–3 (apical), IV d 1–1–0, v 3–2–9 (5 apical). Posterior lateral spinnerets with three segments: basal 4.8, medial 3.8, digitiform apical 4.7. Posterior median spinnerets with one segment. Spermathecae with two receptacles, emergent from a large fused and sclerotized base, each receptacle with a single lobe at its apex, lobes asymmetrical (Figure 14). Urticating setae: Type I present dorsally. Stridulation organ femur IV with pad of plumose stridulatory setae on retrolateral face, lateral opisthosoma with stout setae in area brushed by retrolateral femur IV. Colour: alcohol preserved brown (Figure 15).



Figure 12. *Xenesthis intermedia* Schiapelli and Gerschman, 1945 neotype male (BMNH 1912.8.1.1), tibial apophysis, (A) prolateral view; (B) ventral view; (C) retrolateral view. Scale bars = 1 mm. Arrow indicates AT. Photo credits: R. Gabriel.



Figure 13. *Xenesthis intermedia* Schiapelli and Gerschman, 1945, neotype (left) and non-type (right) males (BMNH 1912.8.1.1–2), habitus of specimens and data labels. Scale bar = 50 mm. Photo credit: D. Sherwood.



Figure 14. *Xenesthis intermedia* Schiapelli and Gerschman, 1945, non-type female (BMNH), spermathecae, dorsal view. Scale bar = 1 mm. Photo credit: D. Sherwood.



Figure 15. *Xenesthis intermedia* Schiapelli and Gerschman, 1945, non-type female (BMNH), habitus of specimen and data labels. Scale bar = 50 mm. Photo credit: D. Sherwood.

Table 5. *Xenesthis intermedia* Schiapelli and Gerschman, 1945, non-type female (BMNH 1912.8.1.3), podomere lengths.

	I	II	III	IV	Palp
Femur	23.9	23.0	21.8	25.9	15.7
Patella	13.4	13.1	13.3	13.3	10.0
Tibia	18.9	17.5	15.7	18.8	12.8
Metatarsus	19.3	17.8	20.3	31.4	–
Tarsus	12.4	12.7	12.2	14.1	13.6
Total	87.9	84.1	83.3	103.5	52.1

Other material examined: 1 ♀(BMNH 1912.8.1.3), Mérida, (8°35'N, 71°9'W), Estado de Mérida, Venezuela; 1 ♂(BMNH 1875.16), Tachira, Venezuela, Mr Higgins, *X. intermedia* det. D. Sherwood 24/06/23.

Distribution: States of Esuque and Mérida, Venezuela.

Remarks: We hereby designate a neotype to clarify the taxonomic status of *Xenesthis intermedia*. A type catalogue of the collections previously indicated that the holotype was not locatable in MACN (Galiano and Maury [18]) and a renewed attempt in spring of 2023 also failed to find the specimen (C. Grismado and M. Ramírez pers. comm. to DS). Given that a total of four curatorial staff at MACN have searched for and been unable to find this specimen in 44 years gives us sufficient justification to conclude it is lost and not simply misplaced. Given that the spermathecae was not illustrated, number/range of maxillary cuspules not given, and the male not described, and with the presence of three *Xenesthis* species in Venezuela (one of which also has the total length value of leg IV exceeding three times the total length of the carapace), the original description cannot be used alone to satisfactorily identify this species. Thus, we consider the designation of a neotype as essential to clarifying the taxonomy of *X. intermedia*.

As allowed by Article 75.3.5 of the International Code of Zoological Nomenclature (ICZN [19]), the neotype is of opposite sex to the holotype originally described by Gerschman and Schiapelli [6]. However, the close proximity of the collection locality of the neotype to that of the holotype (approximately 86 km between the localities in a straight line), at similar elevations (>200 m difference), and situated in the same ecoregion (per Olson et al. [20]) provide evidence it is congruent with the holotype. Additionally, the length of leg IV is more than three times the length of the carapace (a feature given in the original description of *X. intermedia*). Further indirect evidence that the Mérida population is conspecific with the La Unión holotype derives from a non-type female accessioned alongside the neotype male but in a separate jar. This female also has leg IV more than three times the length of the carapace, consistent with this character state given for the holotype, in addition to a carapace length differing only by one millimetre. The non-type female has a different spermathecal morphology to the other known *Xenesthis* species (i.e., *X. monstrosa* and *X. immanis*) and, thus, cannot be confused with them. The neotype is deposited in the Natural History Museum, London, which is a public institution which makes its specimens accessible for study. The neotype and non-type males have been recurated into separate tubes within the same jar by DS, and the neotype is also readily identified by its better condition; the non-type male has the carapace and ocular tubercle missing, and the cause of this damage is unknown. Whilst not stated on the data labels, the accession book confirms that the specimens from Mérida were purchased by the BMNH from William Frederick Henry Rosenberg (DS pers. obs.).

Xenesthis monstrosa Pocock, 1903

Xenesthis monstrosus Pocock, 1903: 93.

Xenesthis monstrosa: Schiapelli and Gerschman, 1979: 298, fig. 39 and 40.

Xenesthis monstrosa: Schmidt, 2003: 196, fig. 558.

Type material: Holotype ♀ (BMNH), New Grenada, (no other data), examined.

Diagnosis: *Xenesthis monstrosa* can be readily distinguished from *X. immanis* and *X. intermedia* by the total length value of leg IV not exceeding three times that of the carapace (leg IV being more than three times the length of the carapace in *X. immanis* and *X. intermedia*). It is further distinguished from those taxa by the lesser number of maxillary cuspules (60–70 vs. 150–170 in *X. immanis* and 90–100 in *X. intermedia*).

Redescription of holotype female: total length including chelicerae: 86.8. Carapace: length 32.1, width 28.3. Caput: raised. Ocular tubercle: slightly raised, length 3.1, width 4.1. Eyes: ALE > PLE, PLE > AME, AME > PME, anterior row procurved, posterior row recurved. Clypeus: narrow; clypeal fringe: long. Fovea: deep, transverse. Chelicera: length 13.4, width 6.8. Abdomen: length 39.2, width 31.8. Maxilla (left-hand side): between 60 and 70 cuspules, covering approximately 39% of proximal edge. Labium: length 5.3, width 4.7, with 45–50 labial cuspules most separated by 0.5–1.0 times the width of a single cuspule. Labio-sternal mounds: separate. Sternum: length 13.2, width 11.1, with three pairs of sigilla. Tarsi I–IV fully scopulate. Metatarsal scopulae: I 100%; II 89%; III 77%; IV 93%. Lengths of leg and palpal segments: see Table 6, legs 4,1,2,3. Spinination: femur I d 0–0–1, II d 0–0–1, III

d 0–0–2, IV d 0–0–1, patella III r 0–0–1, IV r 0–0–1, tibia I v 0–0–2, II v 0–0–2, III v 1–1–3, IV v 3–2–3, palp v 1–2–2, p 1–4–3, metatarsus I v 1–0–1 (apical), II v 1–0–3 (apical), III v 1–2–3 (apical), IV d 0–0–2, v 3–4–5 (4 apical). Posterior lateral spinnerets with three segments: basal 4.8, medial 4.1, digitiform apical 6.1. Posterior median spinnerets with one segment. Spermathecae with two receptacles, emergent from a large fused and sclerotized base, each receptacle with a single lobe at its apex, lobes asymmetrical (Figure 16). Urticating setae: Type I present dorsally. Stridulation organ femur IV with pad of plumose stridulatory setae on retrolateral face, lateral opisthosoma with stout setae in area brushed by retrolateral femur IV. Colour: alcohol preserved brown (Figure 17).

Table 6. *Xenesthis monstrosa* Pocock, 1903, holotype female (BMNH), podomere lengths.

	I	II	III	IV	Palp
Femur	20.4	20.4	18.3	24.0	15.9
Patella	12.9	12.3	11.7	12.2	9.4
Tibia	15.0	13.2	12.3	15.8	11.5
Metatarsus	16.5	16.6	17.9	25.1	–
Tarsus	12.5	10.7	11.6	12.2	12.4
Total	77.3	73.2	71.8	89.3	49.2



Figure 16. *Xenesthis monstrosa* Pocock, 1903, holotype female (BMNH), spermathecae, dorsal view. Scale bar = 1 mm. Photo credit: D. Sherwood.

Distribution: Probably Colombia (see remarks).

Remarks: Previously, *X. monstrosa* was known only from the problematic type locality of “New Grenada”. However, as stated by Gabriel and Sherwood [2], we found a specimen in the BMNH collections labelled as originating from northwestern Colombia which had leg IV length to carapace length ratios congruent with *X. monstrosa*. Unfortunately, this early-twentieth-century specimen, which we examined in mid-2019, has at some point subsequently been moved from the designated tray in the collections and has not yet been relocated. It is unknown who examined or moved this jar, and this frustratingly prevents us from being able to further analyse the specimen. We hope the redescription of the holotype herein can be used by future workers to hopefully match further material to *X. monstrosa* and fully elucidate its true range of distribution.



Figure 17. *Xenesthis monstrosa* Pocock, 1903, holotype female (BMNH), habitus of specimen and data labels. Scale bar = 50 mm. Photo credit: D. Sherwood.

4. Discussion

In comparison to its closest relative *Pamphobeteus* Pocock, 1901, *Xenesthis* is much rarer in museum collections and shows much more interspecific homogeneity. This is particularly evident in females, which have similar spermathecal morphology (with the size and shape of the receptacle lobes almost always varying on opposing sides of a single spermatheca) and extent of scopulation on metatarsus IV. Given the close morphology of females and the limited number of specimens known, it is imperative that additional material and unknown sexes are examined and described. Indeed, we suspect one reason that this genus has not been hitherto revised, other than the homogeneity in females, is due to the daunting realization that the genus is based entirely on old and fragmented museum specimens.

Whilst at an initial glance the palpal bulb morphology of this genus is also relatively homogenous, discrete features including the shape of the embolus and feature state of the newly proposed DEH provide adequately better diagnoses and delimitation (Table 7).

Table 7. Bulb keel morphology of known *Xenesthis* males. Homologous keels present: weakly developed (+), developed (++) , well-developed (+++) , or absent (–).

Taxon	PS	PI	A	SA	RS	RI	Additional Comments
<i>Xenesthis avanzadora</i> sp. nov.	++	+	+	++	+++	–	Width of apical third of embolus noticeably narrower than apical third, embolus angled upwards, PAC developed, DEH well-developed, D weakly developed.
<i>Xenesthis colombiana</i> Simon, 1891	++	+	++	++	++	–	Width of apical third of embolus only slightly narrower than apical third, embolus angled almost straight, PAC developed, D and DEH weakly developed.
<i>Xenesthis intermedia</i> Schiapelli and Gerschman, 1945	++	+	+	++	++	–	Width of apical third of embolus only slightly narrower than apical third, embolus angled upwards, PAC developed, DEH developed, D weakly developed.

This work represents an important first step towards a better understanding of the taxonomy of *Xenesthis* by redescribing and illustrating type specimens which have hitherto not been photographed since their original descriptions during the eighteenth, nineteenth, and twentieth centuries. Furthermore, the framework presented herein can be applied to future works, which we hope will involve good sampling from across the entire known range of this genus to enable the description of missing sexes and further elucidate species boundaries.

Author Contributions: Conceptualization, D.S. and R.G.; methodology, D.S., R.G. and P.P.-R.; investigation, D.S., R.G., P.P.-R., A.D.B. and S.M.L.; data curation, D.S. and R.G.; writing—original draft preparation, D.S. and R.G.; writing—review and editing, D.S., R.G., P.P.-R., A.D.B. and S.M.L.; visualization, D.S. All authors have read and agreed to the published version of the manuscript.

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