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Hidden treasures of the Caribbean: two new genera and one new species of Lesser Antillean ischnocoline spiders (Araneae: Theraphosidae)

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Abstract: The new genus *Caribothele* **gen. nov.** is described to house its type species *Caribothele culebrae* (Petrunkevitch, 1929) **comb. nov.**, from Puerto Rico, transferred from *Holothele* Karsch, 1879. Another new genus, *Encantarana* **gen. nov.** is described to house *Encantarana hamiltoni* **gen. et sp. nov.** based on both sexes, also from Puerto Rico, and is presently monotypic. Four other species misplaced in *Holothele* Karsch, 1879 are transferred to *Caribothele* **gen. nov.**, creating the following new combinations: *Caribothele denticulata* (Franganillo, 1930) **comb. nov.**, *Caribothele maddeni* (Esposito & Agnarsson, 2014) **comb. nov.**, *Caribothele shoemakeri* (Petrunkevitch, 1926) **comb. nov.**, and *Caribothele sulfurensis* (Maréchal, 2005) **comb. nov.**

Keywords: Lesser Antilles, morphology, spider, taxonomy

Introduction

The subfamily Ischnocolinae Simon, 1892 currently contains 17 genera, namely: *Acanthopelma* F. O. Pickard-Cambridge, 1897 (2 species), *Catumiri* Guadanucci, 2004 (5 species), *Chaetopelma* Ausserer, 1871 (8 species), *Cyrtogrammomma* Pocock, 1895

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(3 species), *Dolichothele* Mello-Leitão, 1923 (10 species), *Heterothele* Karsch, 1879 (9 species), *Heterophrictus* Pocock, 1900 (4 species), *Holothele* Karsch, 1879 (6 species), *Ischnocolus* Ausserer, 1871 (9 species), *Neoheterophrictus* Siliwal & Raven, 2012 (8 species), *Nesiergus* Simon, 1903 (3 species), *Plesiophrictus* Pocock, 1899 (8 species), *Psalistops* Simon, 1889 (2 species) *Reichlingia* Rudloff, 2001 (1 species), *Scopelobates* Simon, 1903 (1 species), *Thalerommata* Ausserer, 1875 (12 species), and *Trichopelma* Simon, 1888 (29 species).

Of these, *Chaetopelma, Heterothele, Heterophrictus, Ischnocolus, Neoheterophrictus, Nesiergus* and *Plesiophrictu*s are restricted to the Old World and the remainder of the genera are endemic to the New World. The genus *Holothele* presently contains the following species (World Spider Catalog, 2025): *Holothele culebrae* (Petrunkevitch, 1929) (♀, Puerto Rico), *Holothele denticulata* (Franganillo, 1930) (♂♀, Cuba), *Holothele longipes* (L. Koch, 1875) (♂♀, Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Panama, Peru, Suriname, Trinidad and Tobago, and Venezuela; being the type species of the genus), *Holothele maddeni* (Esposito & Agnarsson, 2014) (♀, Dominican Republic), *Holothele shoemakeri* (Petrunkevitch, 1926) (♀, Saint Thomas), and *Holothele sulfurensis* Maréchal, 2005 (♂♀, Guadeloupe). Only one species of *Holothele* occurs on the mainland of Latin America, namely the widespread *H. longipes*. The remainder of the taxa are biogeographically disjunct, found only on islands of the Lesser Antilles.

This disjunctive distribution makes *Holothele* questionable as a taxonomic entity as these mygalomorphs are dispersal-limited (BOND & STOCKMAN 2008, FOLEY *et al*. 2021). Habitats occupied by these spiders are naturally fragmented (e.g., populations found on different islands or continent). Therefore, we investigated the taxonomic unity of species composing *Holothele* based on morphology, especially the patterns of male genitalic variation, as it is almost universally studied in spider taxonomy for *a priori* species delimitation (see BOND *et al*. 2022) and deeply linked to their evolution. We assumed that the complex structures of the male *Holothele* palp best reflect species divergence, using a morphology-based discovery approach. Conversely, we expected variation in body size and coloration within species to be uninformative for species delineation because these characters often show intraspecific variation in theraphosid spiders (e.g. GALLON 2002).

Recently, through the kindness of Chris A. Hamilton (University of Idaho), a loan of recently-collected Caribbean theraphosids was sent to DS for examination and description. Amongst this material, we found several taxa which were ischnocolines but clearly belonged to no known lineage, both at the generic, and one also at the species, level. Further investigation has revealed they represent two new genera and one new species, which are described in this work.

Material and methods

Specimens were examined under binocular microscopes. Photographs of palpal bulbs, tibial apophyses and spermathecae were made by DS with an Olympus BX63 with an Olympus DP23 camera except for the types of *C. sulfurensis* **comb. nov.** which were made by RG on a Leica M125C auto-montage. Description style follows SHERWOOD e*t al.* (2020). Drawings were made by DS. Abbreviations – Repositories of material examined: MMUE = Manchester Museum, Manchester, United Kingdom; MNHN = Muséum national d'Histoire naturelle, Paris, France; NHMUK = Natural History Museum,

London, United Kingdom; OUMNH = Oxford University Museum of Natural History, Oxford, United Kingdom. Type material of the new taxa are deposited in MMUE. Structures: ALE = anterior lateral eyes, AME = anterior median eyes, PLE = posterior lateral eyes, PME = posterior median eyes; PB = prolateral branch (of tibial apophysis), RB = retrolateral branch (of tibial apophysis).

New term introduced: VRB = ventro-retrolateral branch (of tibial apophysis). Other: leg. = collected by (legit), m.a.s.l = metres above sea level. Leg spine terminology follows Petrunkevitch (1925) with the modifications proposed by Bertani (2001): d = dorsal, v = ventral, r = retrolateral, p = prolateral. Palpal bulb terminology follows Bertani (2000) with modifications for the retrolateral keel: A = apical keel, PI = prolateral inferior keel, PS = prolateral superior keel, RS = retrolateral superior keel, SA = subapical keel, TH = tegular heel, and one newer term: PACK = prolateral accessory central keel (*sensu* Peñaherrera -R. *et al*. 2024). Leg formulae start with the longest leg to the shortest in order of decreasing size, e.g. 4,1,2,3. All measurements are in mm. Authors' emphases in [ ]. Species concept used: Unified Species Concept (*sensu* de Queiroz 2007). Methodology used: morphology-based discovery. Hypothesis: *Holothele* is a paraphyletic genus based on morphology and biogeographic patterns.

ZooBank: urn:lsid:zoobank.org:pub:7564E864-C2F0-43DB-B3C3-2C949995082E.

Taxonomy

Order **Araneae** Clerck, 1757
Infraorder **Mygalomorphae** Pocock, 1892
Family **Theraphosidae** Thorell, 1869
Subfamily **Ischnocolinae** Simon, 1892

***Caribothele* gen. nov.**

Type species: Ischnocolus culebrae Petrunkevitch, 1929 by designation herein.

Diagnosis: *Caribothele* **gen. nov.** most closely resembles *Holothele* but can be distinguished by the spiralled course of the embolus keels (not spiralled in *Holothele*), presence of a third (VRB) branch of the leg I tibial apophysis in addition to the regular PB and RB (VRB absent in *Holothele*), and presence of more than 2 keels on the embolus (keels absent in *Holothele*). The sinuous embolus and numerous, spiralled, keels furthermore easily distinguish *Caribothele* **gen. nov.** from *Encantarana* **gen. nov.** (embolus straight, with only two non-spiralled keels in *Encantarana* **gen. nov.**). The presence of a VRB readily distinguishes *Caribothele* **gen. nov.** from the Ecuadorian genus *Pululahua* Dupérré & Tapia, 2025 (VRB absent in *Pululahua*).

Etymology: The generic epithet is formed from the word Caribbean, in reference to the area in which this genus occurs, and *Holothele*, alluding to the prior assignment of many of the species. The gender is feminine.

Description: For description of genus characters, see descriptions of non-type male and female of *C. culebrae* **comb. nov.** below.

Distribution: Endemic to the Caribbean, known from Cuba, Dominican Republic, Guadeloupe, Puerto Rico, and Saint Thomas.

Remarks: In addition to the overwhelming morphological evidence, *Caribothele* **gen. nov.** is recovered as a sister group to *Holothele* in molecular analyses, which will be published elsewhere in due course (HAMILTON *et al*. in prep.).

Species included: *C. culebrae* **comb. nov.**, *C. denticulata* **comb. nov.**, *C. maddeni* **comb. nov.**, *C. shoemakeri* **comb. nov.** and *C. sulfurensis* **comb. nov.**

Caribothele culebrae (Petrunkevitch, 1929) **gen. et comb. nov.**

Ischnocolus culebrae Petrunkevitch, 1929: 31, figs 18–24.

Holothele culebrae: Rudloff, 1997: 8, fig. 23.

Holothele aff. *culebrae*: Guadanucci, 2020: 88, figs 3.4F–J, 3.5O.

Type material: Holotype ♀ (AMNH), Cuelbra Island, Puerto Rico, 6 March 1906, leg. W. M. Wheeler, not examined.

Other material examined: 1♂ (MMUE G7731.13), outside of El Yunque, Puerto Rico (18.321522, -65.769688), 843 m.a.s.l., 10 June 2011, leg. C. Hamilton and M. Brewer, 'AUMS 16286'; 1♀ (MMUE G7731.14), same data except 'AUMS 16297'; 1♀ (MMUE G7731.12), same data except 'AUMS 16285'.

Diagnosis: Caribothele culebrae **comb. nov.** can be distinguished from *C. denticulata* **comb. nov.** by the softer curvature of the embolus in ventral view (sharper in *C. denticulata* **comb. nov.**) and the weakly developed neck constriction of the spermathecal receptacles (developed in *C. denticulata*), from *C. maddeni* **comb. nov.** by the wider receptacles (narrower in *C. maddeni* **comb. nov.**), and from *C. sulfurensis* **comb. nov.** by the presence of 5 PACK (3 in *C. sulfurensis* **comb. nov.**) and shorter RB (RB elongate in *C. sulfurensis* **comb. nov.**). A full morphological diagnosis from *C. shoemakeri* **comb. nov.** is not possible until the genitalia of that species is described, but they are nonetheless biogeographically disjunct (see Discussion).

Description of non-type male: Total length including chelicerae: 14.9. Carapace: length 6.6, width 5.2. Caput: slightly raised. Ocular tubercle: raised, length 0.6, width 1.3. Eyes: AME > ALE, ALE > PLE, PLE > PME, anterior eye row procurved, posterior row slightly recurved. Clypeus: narrow; clypeal fringe: medium. Fovea: shallow, transverse. Chelicera: length 1.9, width 1.2. Abdomen: length 6.4, width 2.6. Maxilla with 140–150 cuspules covering approximately 57% of the proximal edge. Labium: length 0.6, width 0.9, with 55 cuspules most separated by 0.5–1.0 times the width of a single cuspule. Labio-sternal mounds: separate. Sternum: length 2.7, width 2.5, with three pairs of sigilla. Tarsi I–IV divided by band of setae. Metatarsal scopulae: I 70%; II 58%; III 30%; IV [uninterpretable, legs lost]. Lengths of legs and palpal segments: see table 1, legs 4,1,2,3 [deduced from known data of historical specimens]. Spination: femur III d 0–3–3, patella III p 0–0–1, tibia I p 0–1–1, v 1–0–2, II r 1–0–1, v 1–1–3, III p 1–0–2, r 1–1–1, v 1–1–3, IV [uninterpretable, legs lost], palp p 2–3–2, metatarsus I p 0–1–0, v 1–0–1 (apical), II r 0–1–0, v 0–1–1 (apical), III p 1–1–1, r 1–1–1, v 2–2–5 (3 apical), IV [uninterpretable, legs lost]. Tibia I with tri-branched apophysis, RB longer than PB, each with a single megaspine situated apically, VRB present behind RB and half the size of RB, apex rounded and with absence of a megaspine (Figs 2A–F). Femur

Table 1: *Caribothele culebrae* (Petrunkevitch, 1929) comb. nov. non-type male (MMUE G7731.13), length of legs and palp. * = missing segment.

	I	II	III	IV	Palp
Femur	5.3	5.1	4.7	*	3.3
Patella	3.1	2.9	2.5	*	1.7
Tibia	4.6	3.6	3.3	*	2.6
Metatarsus	4.0	3.7	4.2	*	–
Tarsus	2.7	2.5	2.2	*	1.1
Total	19.7	17.8	16.9	*	8.7

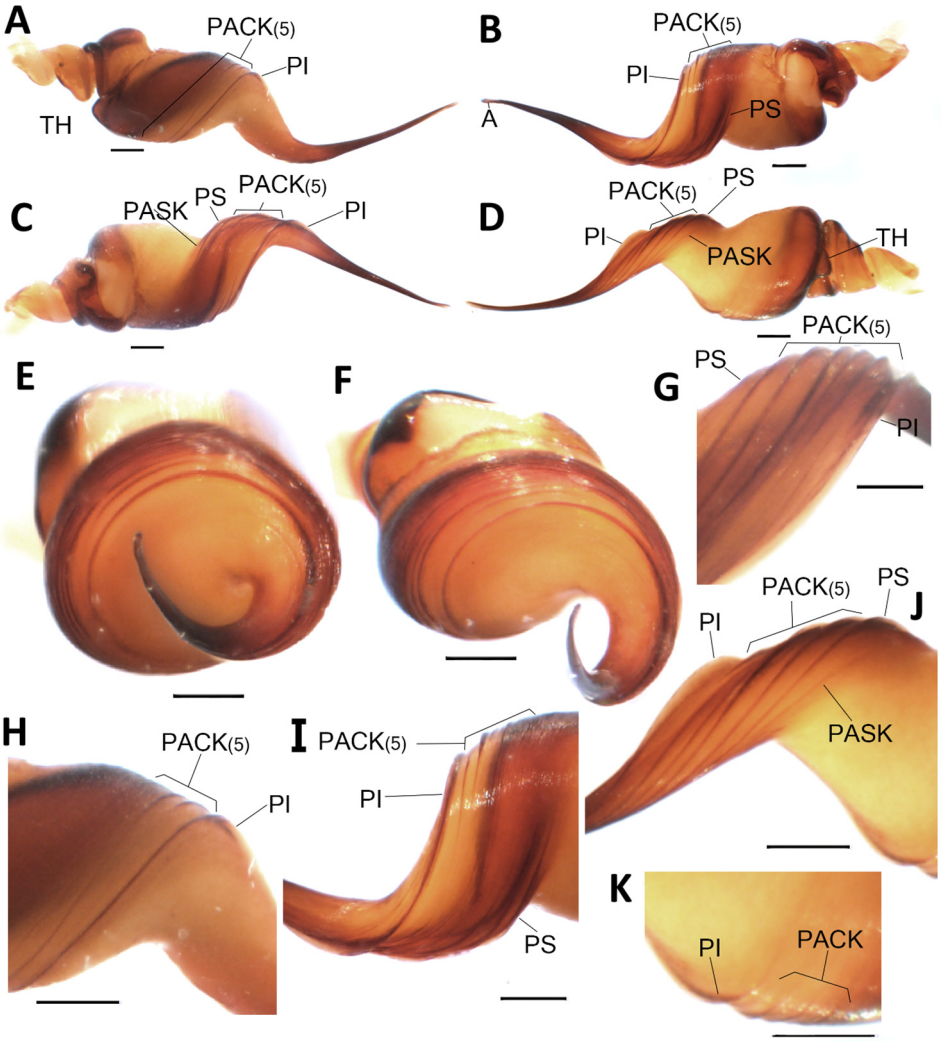

Fig. 1: *Caribothele culebrae* (Petrunkevitch, 1929) comb. nov. non-type male (MMUE G7731.13). Palpal bulb (left-hand side), A prolateral view, B retrolateral view, C dorsal view, D ventral view, E apical view, F prolatero-apical view, G close-up of embolus keels, dorso-prolateral view, H Idem, prolateral view, I Idem, retrolateral view, J Idem, ventral view, K close-up of emergence point of keels on base of bulb, retrolateral view. Scale bars = 0.2 mm.

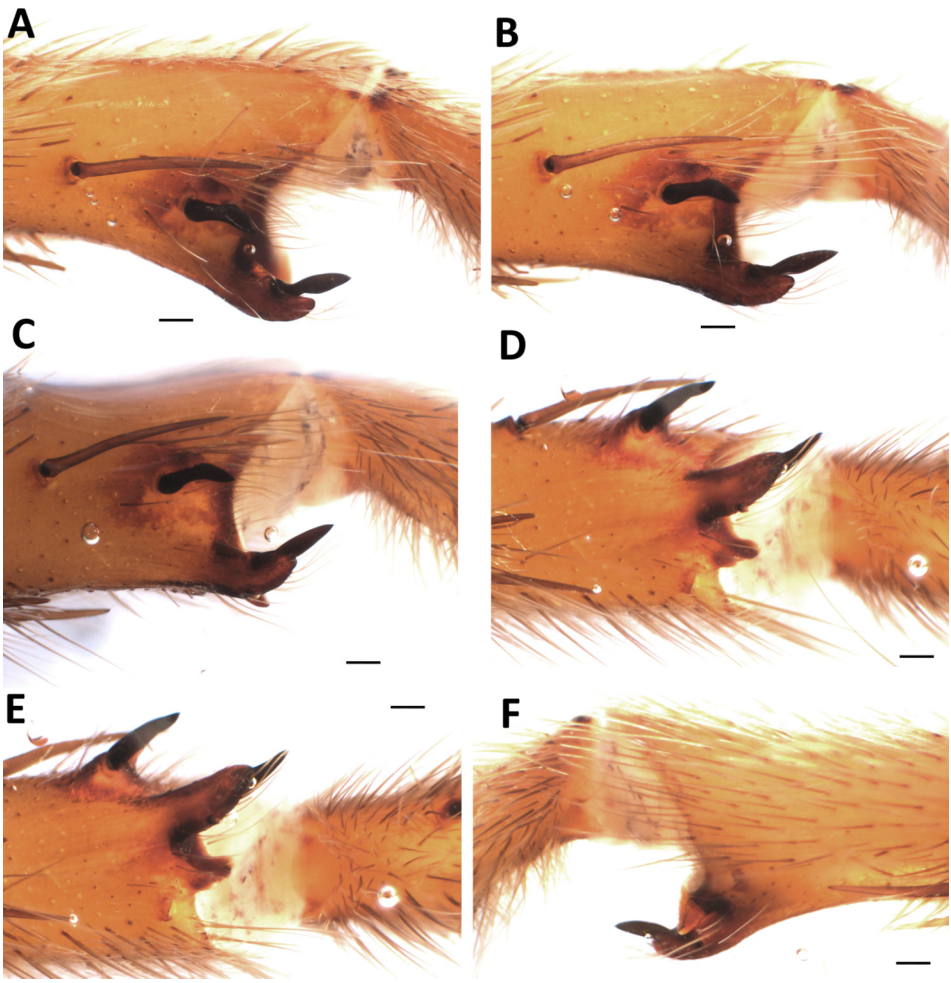

Fig. 2: ***Caribothele culebrae*** **(Petrunkevitch, 1929) comb. nov. non-type male (MMUE G7731.13). Tibial apophysis (left-hand side), A prolateral view, B prolatero-ventral view 1, C prolatero-ventral view 2, D ventro-prolateral view, E ventral view, F retrolateral view. Scale bars = 0.2 mm.**

III: incrassate. Palpal tibia: incrassate. Palpal cymbium: unmodified. Metatarsus I: slightly curved. Posterior lateral spinnerets with three segments, basal 1.1, median 0.8, digitiform apical 1.0. Posterior median spinnerets with one segment. Palpal bulb with developed TH, base of bulb long, embolus approximately 25% longer than base of bulb; embolus sinuous with distinct retrolateral then prolateral curvature; PS, PI, PASK, and 5 PACK present, developed, PI elongate; PC present and constricted in all but basal quarter (Figs 1A–K). Colour: alcohol preserved brown.

Description of non-type female (MMUE G7731.14): Total length including chelicerae: 14.6. Carapace: length 6.1, width 4.4. Caput: raised. Ocular tubercle: slightly raised, length 0.6, width 1.1. Eyes: AME > ALE, ALE > PLE, PLE > PME, anterior row procurved, posterior row recurved. Clypeus: narrow; clypeal fringe: medium. Fovea: shal-

Table 2: *Caribothele culebrae* (Petrunkevitch, 1929) comb. nov. non-type female (MMUE G7731.14), length of legs and palp. * = missing segment.

	I	II	III	IV	Palp
Femur	5.3	5.1	4.7	*	3.3
Patella	3.1	2.9	2.5	*	1.7
Tibia	4.6	3.6	3.3	*	2.6
Metatarsus	4.0	3.7	4.2	*	–
Tarsus	2.7	2.5	2.2	*	1.1
Total	19.7	17.8	16.9	*	8.7

low, transverse. Chelicera: length 2.2, width 1.3. Abdomen: length 6.3, width 2.4. Maxilla with 150–160 cuspules, covering approximately 55% of proximal edge. Labium: length 0.8, width 1.1, with 60 labial cuspules most separated by 0.5–1.0 times the width of a single cuspule. Labio-sternal mounds: separate. Sternum: length 2.6, width 2.3, with three pairs of sigilla. Tarsi I–IV divided by band of setae. Metatarsal scopulae: I 100%; II 100%; III 33%; IV [uninterpretable, legs lost]. Lengths of leg and palpal segments: see table 2, legs 4,1,2,3 [deduced from known data of historical specimens]. Spination:

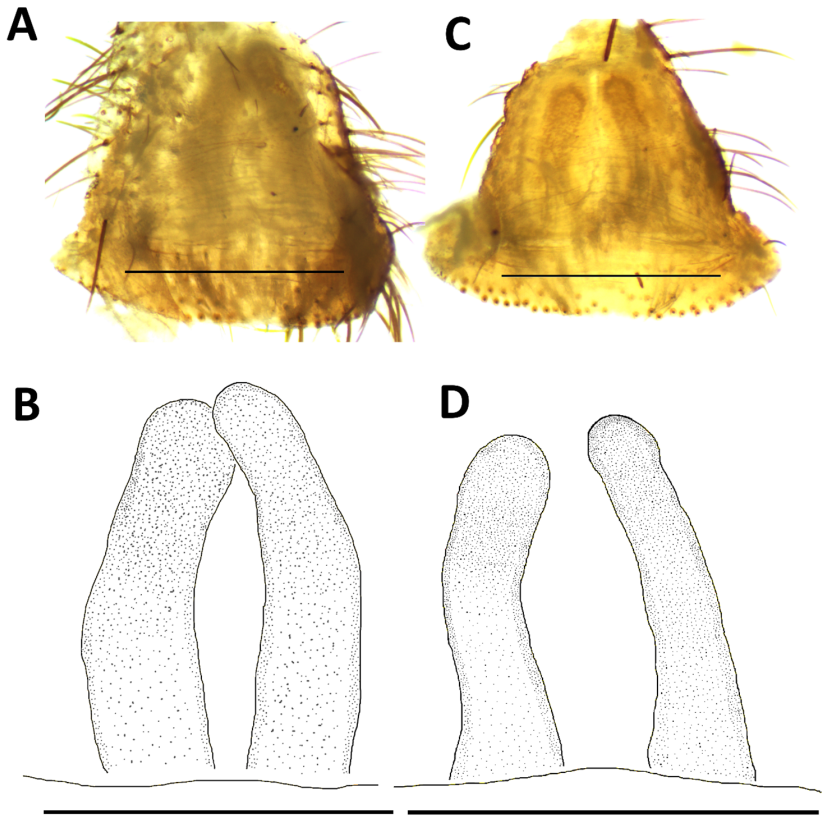

Fig. 3: *Caribothele culebrae* (Petrunkevitch, 1929) comb. nov. non-type females, spermathecae. A–B female 1 (MMUE G7731.14), C–D female 2 (MMUE G7731.12). Scale bars = 1 mm.

femur I d 0–0–1, II d 0–0–1, III d 0–0–3 patella III p 0–0–2, tibia I p 0–0–1, v 1–1–2, II p 0–1–1, v 1–2–2, III p 2–1–1, r 0–1–2, v 1–1–2, IV [uninterpretable, legs lost], palp p 0–2–0, v 0–1–2, metatarsus I v 0–1–1 (apical), II v 0–1–1 (apical), III p 1–1–1, r 1–1–1, v 2–3–3 (apical), IV [uninterpretable, legs lost]. Posterior lateral spinnerets with three segments: basal 1.4, medial 0.8, digitiform apical 0.9. Posterior median spinnerets with one segment. Spermathecae with two receptacles, each with a single lobe, left receptacle wider, with indistinct neck construction, right receptacle narrower, with more pronounced neck constriction (Figs 3A–B). Colour: alcohol preserved brown.

Colour in life: Only male photographed alive (Figs 4A–B) but female has same colouration in life (C. Hamilton pers. comm.).

Fig. 4: *Caribothele culebrae* (Petrunkevitch, 1929) comb. nov. non-type male (MMUE G7731.13), habitus in life. A dorso-lateral view (right-hand side), B dorso-lateral view (left-hand side). Photographs courtesy of Chris Hamilton.

Distribution: Puerto Rico.

Remarks: We also depict the spermathecae (Fig. 3C–D) of another female (MMUE G7731.12) to show the (minimal) variation. Unfortunately, in both specimens both legs IV are missing from each side of both specimens and cannot be found (C. Hamilton pers. comm.), the specimens were previously used for DNA extraction but it would be unusual to take a whole pair of legs; this appears to be accidental. PETRUNKEVITCH (1925) designates one female as the [holo]type but mentions various other adult and immature female specimens which must be regarded as non-types as he did not explicitly designate as paratypes.

Caribothele sulfurensis (Maréchal, 2005) **gen. et comb. nov.**
Holothele sulfurensis: Maréchal, 2005: 212, figs 1A-D, 2A-B, 3A-B, 4A–B.

Type material: Holotype ♀ (MNHN), Base sud-ouest du dôme de la Soufrière (16°02'30"N, 61°39'40"W), Guadaloupe, 1150 m.a.s.l, June 2001, leg. C. Rollard and P. Maréchal, examined; allotype ♂ (MNHN), same data, examined.

Diagnosis: Caribothele sulfurensis **comb. nov.** is closest to *C. culebrae* **comb. nov.** and thus differs from all species except the aforementioned by the same characters which separate *C. culebrae* from these taxa. The diagnosis of *C. culebrae* **comb. nov.** from *C. sulfurensis* **comb. nov.** is given above. A full morphological diagnosis from *C. shoemakeri* **comb. nov.** is not possible but the species differ biogeographically based on type localities (see Discussion).

Description: See Maréchal (2005).

Distribution: Guadeloupe.

Remarks: Since this is the only species in the genus other than *C. culebrae* **sp. nov.** which is known from both sexes, photographs of the palpal bulb (Figs 5A–H) and tibial apophysis (Figs 6 A–E) of the allotype are presented.

Further misplaced species: The following species are wrongly included in *Holothele* Karsch, 1879. One, where the male is know, posseses a spiralled embolus with multiple keels, as found in *Caribothele* **gen. nov.** and with a thin and elongate embolus tip unlike *Pululahua*. The other two are known only from females, one of which has had its spermathecae illustrated, providing evidence for its placement. The other species is transferred based on its disjunct geographic distribution from *Holothele* (see Discussion). We hope their transfer will stimulate the publication of fuller data and proper diagnoses, as the species are currently not as well known as other congeners. Their removal technically renders the genus *Holothele* monotypic, but this is a temporary artefact, as a number of current junior synonyms of the type species *H. longipes* (L. Koch, 1875) are in fact distinct species based on our examination of type specimens and non-type specimens (pers. obs.). This matter is outside the scope of this work.

Caribothele denticulata (Franganillo, 1930) **gen. et comb. nov.**
Ischnoculus denticulatus Franganillo, 1930: 5.
Ischnocolus denticularis: Roewer, 1942: 235.
Holothele denticulata: Rudloff, 1997: 9, figs 5–7.

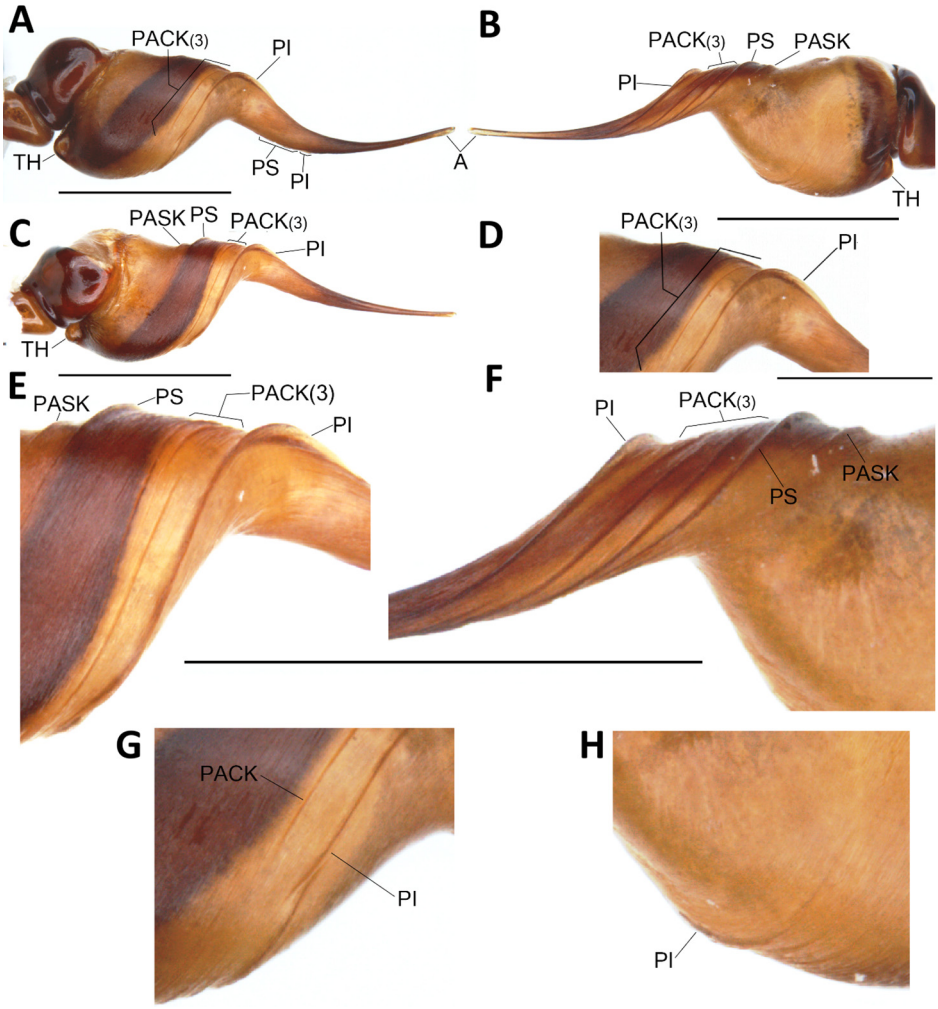

Fig. 5: ***Caribothele sulfurensis*** **(Maréchal, 2005) gen. et comb. nov. allotype male (MNHN). Palpal bulb (left-hand side), A prolateral view, B retrolateral view, C dorsal view, D close-up of keels, dorsal view, E Idem, prolateral view, F Idem, retrolateral view, G Idem, base of bulb, prolateral view, H Idem, retrolateral view. Scale bars = 1 mm (A–C, E–H), 0.5 mm (D).**

Distribution: Cuba.

Remarks: Only the male of this species has been illustrated, but the illustrations in RUDLOFF (1997) clearly show this taxon belongs to *Caribothele* **gen. nov.** based on palpal bulb morphology.

Caribothele maddeni (Esposito & Agnarsson in Bloom *et al.*, 2014) **gen. et comb. nov.**

Trichopelma maddeni Esposito & Agnarsson, in Bloom *et al.*, 2014: 152, figs 3a–g.

Holothele maddeni: Mori & Bertani, 2020: 123.

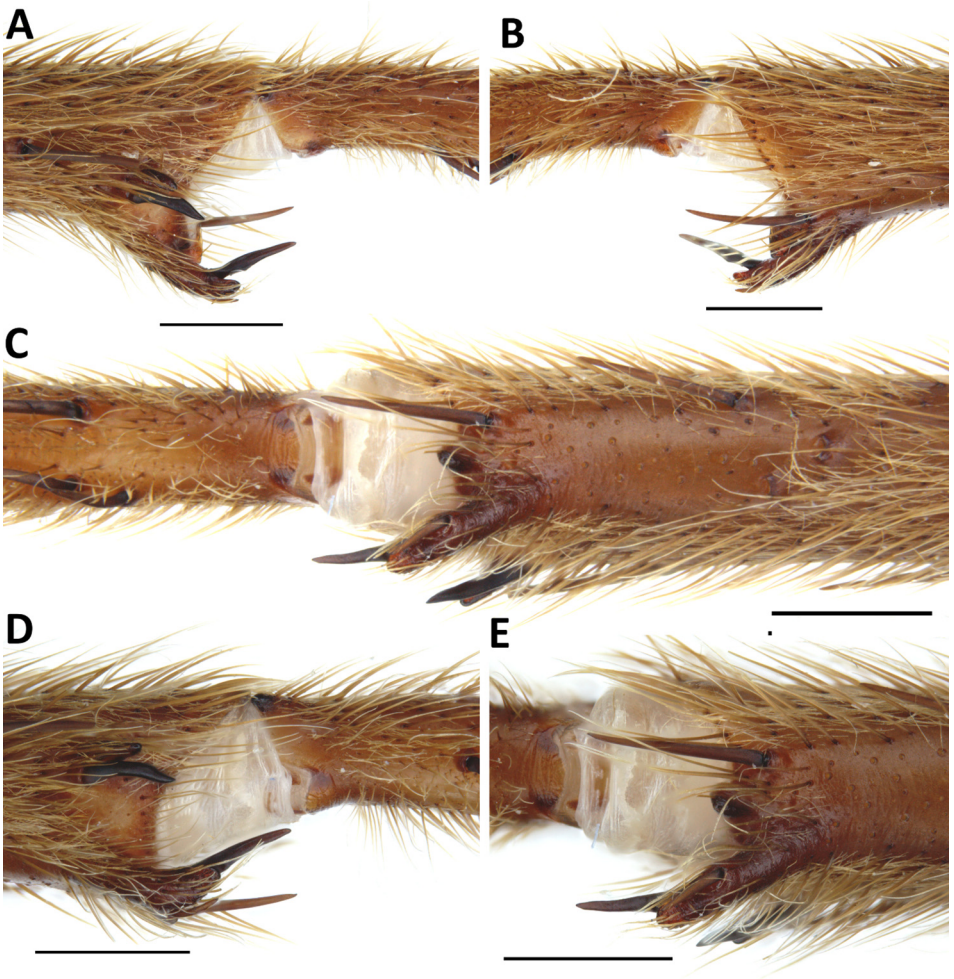

Fig. 6: *Caribothele sulfurensis* (Maréchal, 2005) gen. et comb. nov. allotype male (MNHN). Tibial apophysis (left-hand side), A prolateral view, B retrolateral view, C ventral view, D prolatero-ventral view, E retro-ventral view. Scale bars = 1 mm.

Distribution: Dominican Republic.

Remarks: The species was well-described and the spermathecal morphology of this species, as illustrated in BLOOM et al. (2014), support the placement of this species in the genus.

Caribothele shoemakeri (Petrunkevitch, 1926) **gen. et comb. nov.**
Ischnocolus shoemakeri Petrunkevitch, 1926: 36, figs 2–3.
Holothele shoemakeri: Rudloff, 1997: 11.

Distribution: Saint Thomas.

Remarks: This species is in need of redescription, due to the fact the genitalia of the holotype (if it is indeed adult) was not dissected or described (see BOND *et al*. 2022). We were unable to access the holotype for this study and its whereabouts are unknown. However, its biogeographic distribution and somatic characters given in the original description support the hypothesis that it does not belong to *Holothele sensu stricto*. Therefore, it is more congruently placed in *Caribothele* **gen. nov.**

***Encantarana* gen. nov.**

Type species: *Encantarana hamiltoni* **gen. et sp. nov.** by monotypy.

Diagnosis: *Encantarana* **gen. nov.** most closely resembles *Holothele* but can be distinguished by the presence of keels on the embolus in the type species (keels absent in males of *Holothele*) and by the presence of neck construction on the receptacles of the female spermathecae in the type species (constriction absent in *Holothele*). It is readily distinguished from *Caribothele* **gen. nov.** by the non-sinuous embolus and low number of [non-spiralled] keels of the type species (vs. sinuous embolus with numerous spiralled keels in *Caribothele* **gen. nov.**).

Etymology: The generic epithet is formed from the Spanish word encanto meaning enchanted (in reference to Puerto Rico's other name, the enchanted isle) and araña referring to spider. The gender is feminine.

Description: For description of genus characters, see descriptions of holotype male and paratype female of *E. hamiltoni* **sp. nov.** below.

Distribution: Endemic to the Caribbean, known only from Puerto Rico.

Species included: *E. hamiltoni* **sp. nov.**

***Encantarana hamiltoni* sp. nov.**

Type material: Holotype ♂ (MMUE G7731.2), Guanica State Park, E outside Guanica on 33,; on Camino Julio Velez trail, Puerto Rico (17.98149, -66.87568), 165 m.a.s.l, leg. C. Hamilton and M. Brewer, 'APH_3047'; paratype ♀ (MMUE G7731.11), same data except 'APH_3046'; paratype 1♀, 5 imm. (MMUE G7731.1), same data except 'APH_3048'; paratype imm. (MMUE G7731.1), same data except APH_3048 [separated from rest of APH_3048 sample].

Diagnosis: See diagnosis for genus.

Etymology: The specific epithet is a patronym in honour of our friend and colleague, Chris A. Hamilton (University of Idaho), who collected the specimens and has contributed significantly to the taxonomy of tarantulas through his revision of US '*Aphonopelma*' species and ongoing work. The authors have had the good fortune to know Chris for many years and are grateful for support he has rendered us.

Description of holotype male: Total length including chelicerae: 20.0. Carapace: length 9.4, width 8.0. Caput: slightly raised. Ocular tubercle: raised, length 1.0, width 1.4. Eyes: AME > ALE, ALE > PLE, PLE > PME, anterior eye row procurved, poste-

Table 3: *Encantarana hamiltoni* gen. et sp. nov. holotype male (MMUE G7731.2), length of legs and palp.

	I	II	III	IV	Palp
Femur	7.1	6.1	6.4	8.2	5.4
Patella	3.7	3.1	2.9	4.3	2.2
Tibia	6.3	5.3	4.2	5.9	2.9
Metatarsus	5.6	5.0	5.6	7.1	–
Tarsus	4.0	3.1	3.2	3.9	1.3
Total	26.7	22.6	22.3	29.4	11.8

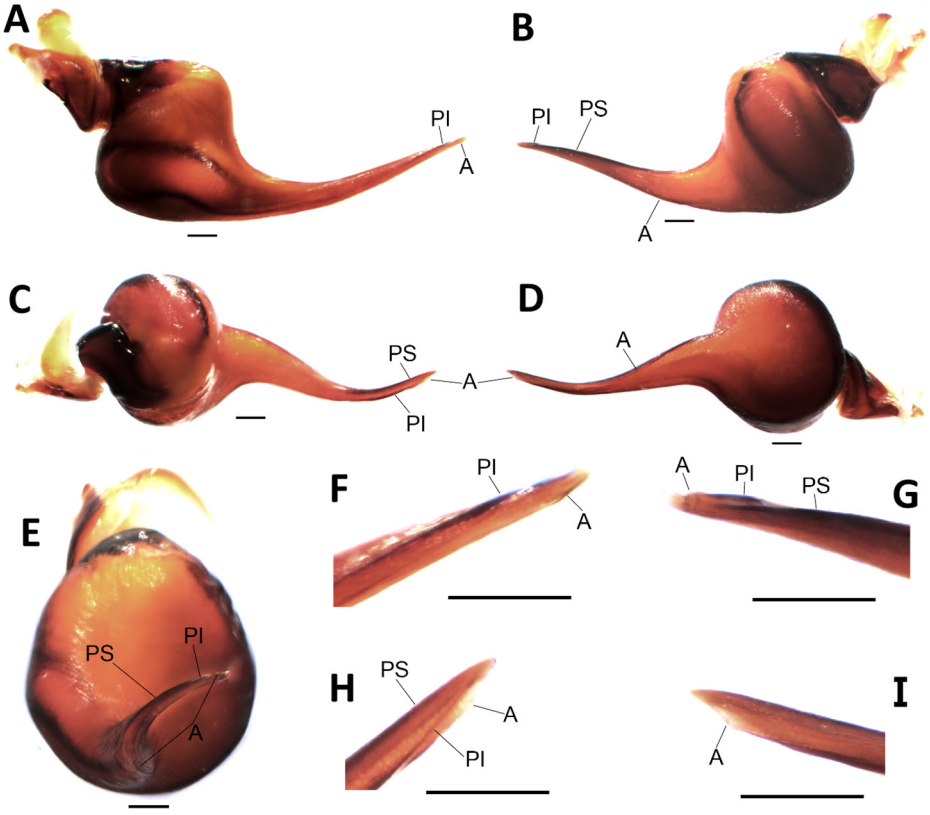

Fig. 7: *Encantarana hamiltoni* gen. et sp. nov. holotype male (MMUE G7731.2). Palpal bulb (left-hand side), A prolateral view, B retrolateral view, C dorsal view, D ventral view, E apical view, F close-up of embolus, prolateral view, G Idem, retrolateral view, H Idem, dorsal view, I Idem, ventral view. Scale bars = 0.2 mm.

rior row slightly recurved. Clypeus: narrow; clypeal fringe: long. Fovea: shallow, transverse. Chelicera: length 2.4, width 1.7. Abdomen: length 8.2, width 4.3. Maxilla with 60–70 cuspules covering approximately 30% of the proximal edge. Labium: length 0.9, width 1.2, with 11 cuspules most separated by 0.5–1.0 times the width of a single cuspule. Labio-sternal mounds: joined. Sternum: length 4.1, width 3.9, with three pairs of sigilla. Tarsi I–IV divided by a band of setae. Metatarsal scopulae: I 100%; II 100%; III

Table 4: *Encantarana hamiltoni* gen. et sp. nov. paratype female (MMUE G7731.11), length of legs and palp.

	I	II	III	IV	Palp
Femur	6.8	5.9	5.3	6.7	4.4
Patella	4.1	4.1	3.1	3.3	2.0
Tibia	4.7	3.7	3.3	4.2	2.6
Metatarsus	4.3	4.1	4.7	6.6	–
Tarsus	2.8	2.7	2.5	3.0	3.1
Total	22.7	20.5	18.9	23.8	12.1

37%; IV 12%. Lengths of legs and palpal segments: see table 3, legs 4,1,2,3. Spination: femur III d 0–4–2, IV d 0–0–1, patella III p 0–0–1, tibia I p 0–1–1, v 0–2–3, II p 0–1–1, v 1–1–2, III p 1–1–0, r 1–1–0, v 2–2–3, IV r 1–0–2, v 3–2–3, palp p 0–1–1, metatarsus I v 0–1–1 (apical), II v 1–0–1 (apical), III p 1–1–1–, r 0–1–1, v 2–0–3 (apical), IV p 1–1–1, r 0–1–1, v 2–3–3 (apical). Tibia I with apophysis absent, presence of two megaspines, each with a pointed apex and bend immediately prior to said apex (Figs 8A–E). Femur III: slightly incrassate. Palpal tibia: slightly incrassate. Palpal cymbium: unmodified. Metatarsus I: unmodified. Posterior lateral spinnerets with three segments, basal 1.4, median 0.7, digitiform apical 1.0. Posterior median spinnerets with one segment. Palpal bulb with absence of TH; base of bulb rounded, embolus more than 50%

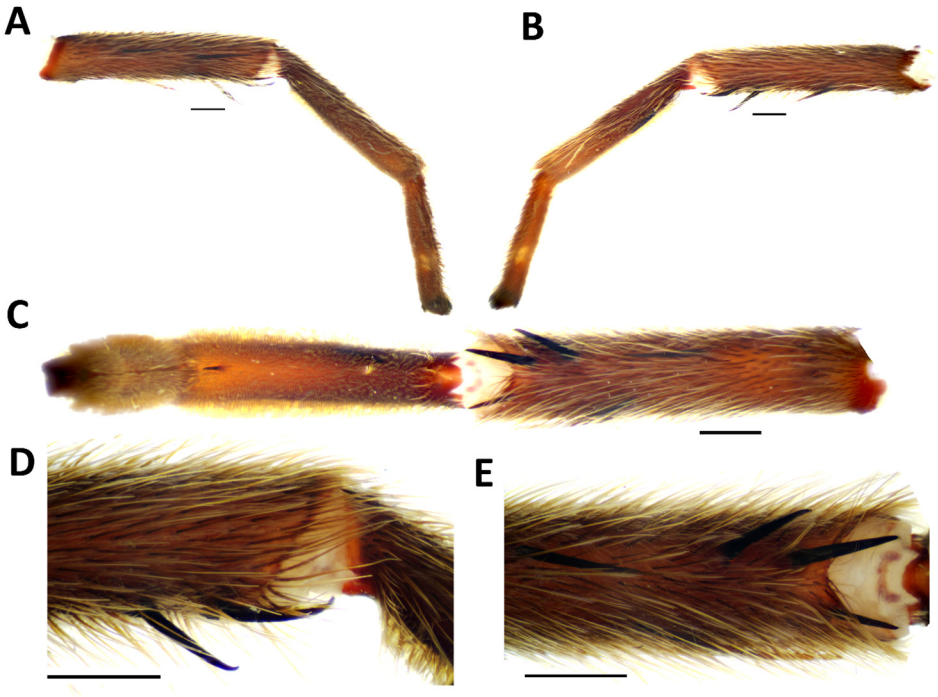

Fig. 8: *Encantarana hamiltoni* gen. et sp. nov. holotype male (MMUE G7731.2). A–C tibia, metatarsus and tarsus I (left-hand side), D–E tibia I (left-hand side), A prolateral view, B retrolateral view, C ventral view, D prolateral view, E ventral view. Scale bars = 0.2 mm.

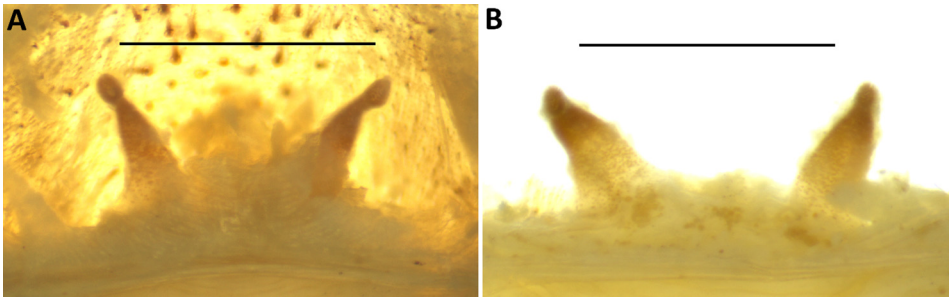

Fig. 9: *Encantarana hamiltoni* gen. et sp. nov. paratype females, spermathecae, dorsal view. A female 1 (MMUE G7731.11), B female 2 (MMUE G7731.1). Scale bars = 1 mm.

longer than base of bulb; PS, PI and A weakly developed; PC present and constricted its entire length (Figs 7A–I). Colour: alcohol preserved brown.

Description of paratype female (MMUE G7731.11): Total length including chelicerae: 20.1. Carapace: length 9.2, width 7.3. Caput: raised. Ocular tubercle: slightly raised, length 0.8, width 1.6. Eyes: AME > ALE, ALE > PLE, PLE > PME, anterior row procurved, posterior row recurved. Clypeus: narrow; clypeal fringe: long. Fovea: shallow, transverse. Chelicera: length 2.9, width 2.2. Abdomen: length 8.0, width 6.3. Maxilla with 60–70 cuspules, covering approximately 35% of proximal edge. Labium: length 0.8, width 1.3, with 16 labial cuspules most separated by 0.5–1.0 times the width of a single cuspule. Labio-sternal mounds: joined. Sternum: length 3.8, width 3.5, with three pairs of sigilla. Tarsi I–IV divided by a band of setae. Metatarsal scopulae: I 100%; II 100%; III 32%; IV 20%. Lengths of leg and palpal segments: see table 4, legs 4,1,2,3. Spination: femur III d 0–2–4, palp d 0–0–1, patella III p 0–0–1, tibia I r 0–2–2, v 1–1–2, II r 0–1–1, v 1–1–1, III p 1–1–0, r 0–1–1, v 2–2–2, IV r 1–0–1, v 2–2–3, palp p 0–2–2, metatarsus I v 1–0–1 (apical), II v 1–0–1 (apical), III p 1–2–1, r 0–1–1, v 1–1–3 (apical), IV p 1–1–1, r 0–1–1, v 2–2–3 (apical). Posterior lateral spinnerets with three segments: basal 0.7, medial 0.3, digitiform apical 0.3. Posterior median spinnerets with one segment. Spermathecae with two receptacles, wide basally and thinning in apical quarter, each ending in a single asymmetrical lobe with neck constriction (Fig. 9A). Colour: alcohol preserved brown.

Colour in life: See Figs 10A–B.

Distribution: Known only from the type locality.

Remarks: We also present the spermathecae (Fig. 9B) of another paratype (MMUE, G7731.1), which was collected with offspring (C. Hamilton pers. comm.). One of these offspring (also 'APH_3048' but placed by C. Hamilton in separate tube) has been sequenced and will appear in an upcoming DNA phylogeny by HAMILTON *et al*. (in prep.).

Fig. 10: ***Encantarana hamiltoni*** **gen. et sp. nov. holotype male (MMUE G7731.2) and paratype female (MMUE G7731.1) in life. A male, B female. Photographs courtesy of Chris Hamilton.**

Discussion

The Lesser Antilles in particular features a wide variety of ecoregions (*sensu* DINERSTEIN *et al*. 2017), for instance two ischnocolines treated herein both occur on Puerto Rico but inhabit two distinct ecoregions: the Puerto Rican moist forests (*C. culebrae* **gen. et comb nov.**) and Puerto Rican dry forests (*E. hamiltoni* **gen. et sp. nov.**). The other known species of *Caribothele* **gen. nov.** also currently inhabit distinct and separate ecoregions: Cuban moist forests (*C. denticulata* **gen. et comb. nov.**), Hispaniolan moist forests (*C. maddeni* **gen. et comb. nov.**), Caribbean shrublands (*C.*

shoemakeri **gen. et comb. nov.**), and Leeward Islands moist forests (*C. sulfurensis* **gen. et comb. nov.**). Whilst it is plausible that species of *Caribothele* **gen. nov.** may be found in more than one ecoregion on an island itself (although this has not yet been demonstrated with voucher specimens in any study), the low dispersal ability and sheer variation of ecoregions between islands makes a strong case against the possibility of widespread species within the Caribbean ischnotheline lineages.

Our hypothesis that *Holothele* was a paraphyletic genus is strongly supported by both morphological and biogeographic evidence. Morphologically, the newly described genus *Caribothele* **gen. nov.** shares similarities with *Holothele* but is distinguished by key features such as the spiralled course of the embolus keels (not so in *Holothele*), the presence of a VRB branch on tibia I (absent in *Holothele*), and a greater number of keels on the embolus. Biogeographically, the distribution of these lineages across the diverse and distinct ecoregions of the Lesser Antilles, ranging from moist forests to arid shrubland, corroborates their separation, especially considering their low dispersal ability and the ecological differentiation of these habitats. The scattered and region-specific presence of species within these lineages suggests they do not form a monophyletic group, thus validating the reclassification and the recognition of *Caribothele* **gen. nov.** as a distinct genus. Additionally, *Encantarana* **gen. nov.**, another closely related, and previously unrecognised, new genus is readily distinguished from *Caribothele* **gen. nov.** morphologically (see Diagnoses) and occurs in a separate ecoregion on the same island as another member of the same subfamily (*Caribothele culebrae* **gen. et comb. nov.**), demonstrating that speciation and even clades are diverging in short, ecoregionally distinct, areas on single islands in the Caribbean.

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