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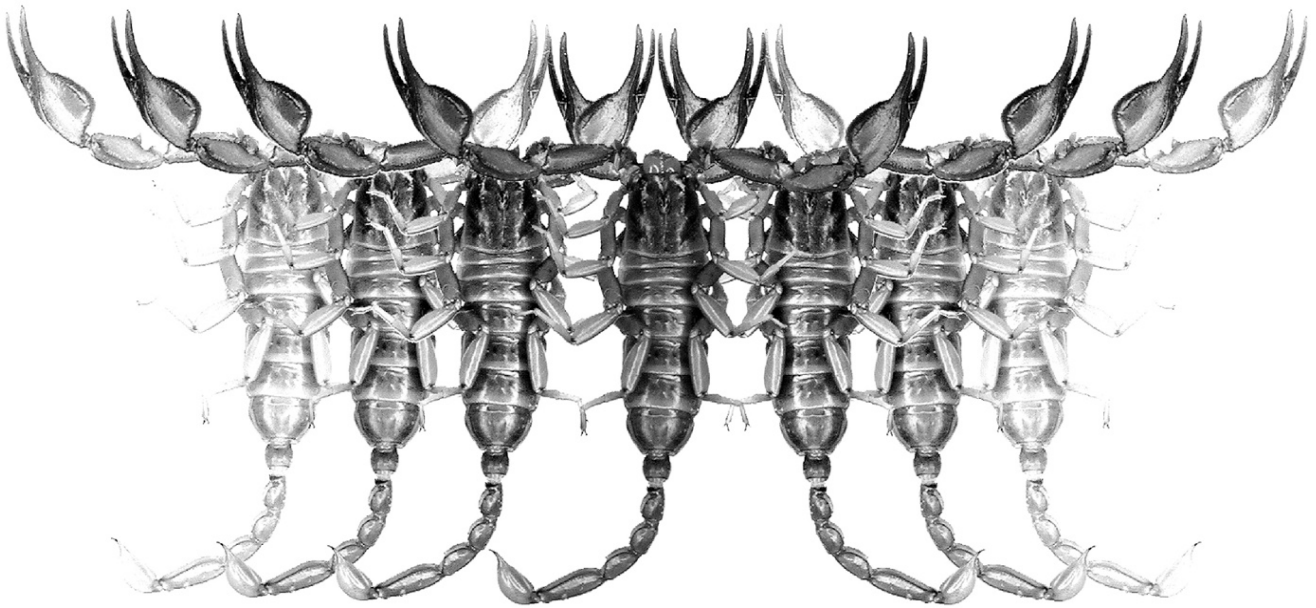
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**A new Lesser Antillean scorpion of the genus
Didymocentrus Kraepelin, 1905
(Scorpiones: Diplocentridae)**

Rolando Teruel & Karl Questel

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A new Lesser Antillean scorpion of the genus *Didymocentrus* Kraepelin, 1905 (Scorpiones: Diplocentridae)

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Summary

A new species of the diplocentrid scorpion of the genus *Didymocentrus* Kraepelin, 1905 is herein described from the Lesser Antillean island of Martinique. It long remained misidentified as *Didymocentrus lesueurii* (Gervais, 1844), the only species of this genus inhabiting the adjacent island of Saint Lucia. The direct comparison of adults of both sexes from these two islands revealed solid morphological characters, which warrant their recognition as two different taxa. Each one is endemic from a single major island, where it is widespread even in its satellite islets. This addition raises the known composition of the genus to 12 species, 10 of them exclusively Antillean.

Introduction

In the classic revision of the Circum-Caribbean members of Diplocentridae Karsch, 1880, published by Francke (1978), a single species of this family was recorded from the island of Martinique as *Didymocentrus lesueurii* (Gervais, 1844). It was until then an enigmatic scorpion, which had been originally described from “Amérique Septentrionale” and thereafter widely recorded throughout tropical America under different generic assignments; see complete reference lists in Francke (1978: 6) and Sissom & Fet (2000: 334–335). Almost all of these records actually implied misidentifications as demonstrated by Francke (1978), who examined Gervais’s type and restricted its originally vague type locality (“North America”) to the Lesser Antillean island of Saint Lucia, and regarded as conspecific the specimens he studied from Martinique. From there on, most of the literature records of *D. lesueurii* (e.g., Armas, 1982, 1988; Soleglad & Fet, 2003a, 2006; Soleglad et al., 2005; Kamenz & Prendini, 2008; Santibáñez-López, 2012; Santibáñez-López et al., 2014; Dupré, 2016) were actually based upon specimens from Martinique, but their specific identity was never questioned.

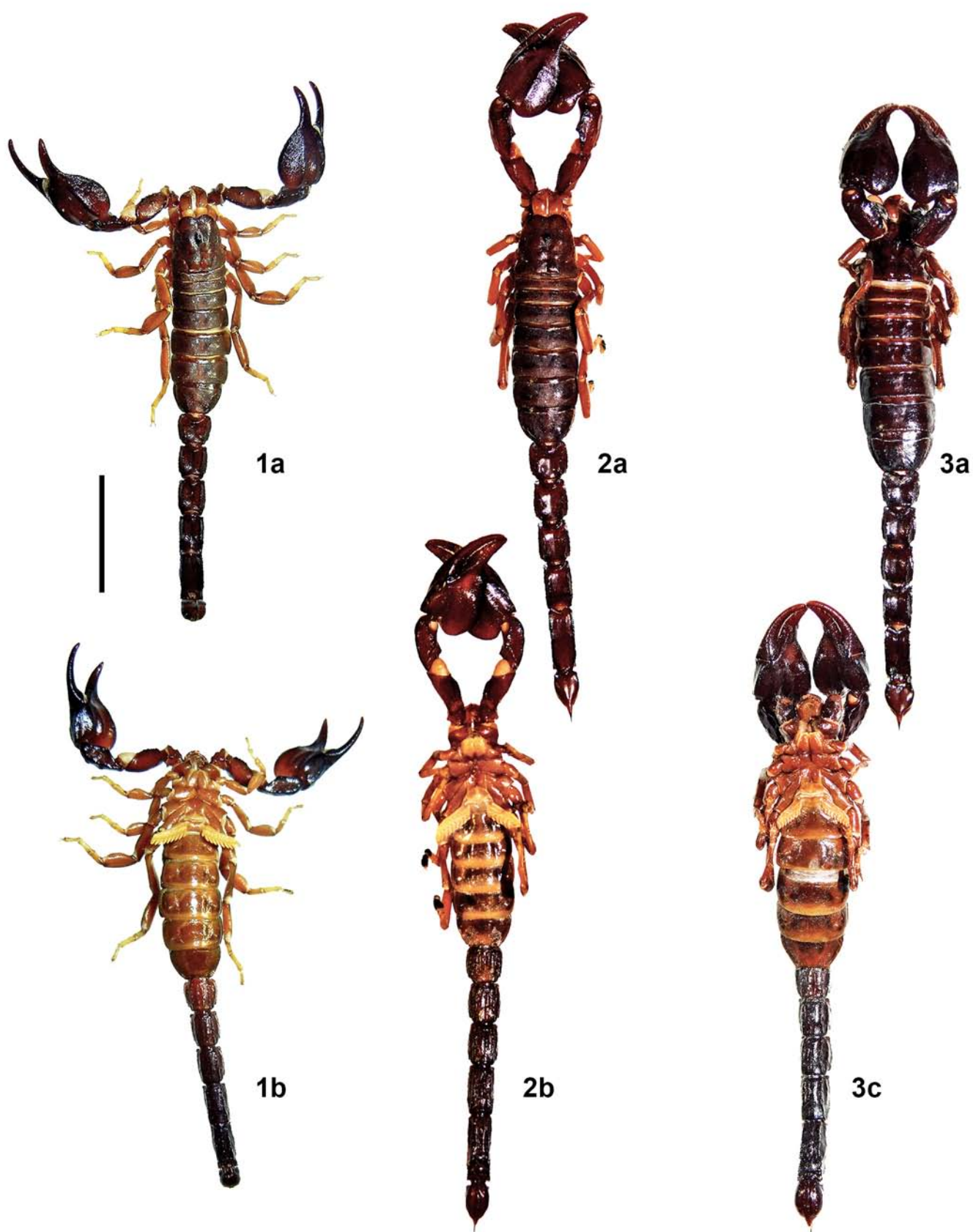
For the last 20 years, the present senior author has been working intensively on the taxonomy of Diplocentridae. A total of 29 papers have been published so far, which cover all genera of this family and as long as taxonomy alone is concerned, contributed the descriptions of a new genus (Teruel & Kovařík, 2012) and 12 new species (Teruel, 2003, 2006, 2008, 2013; Teruel & Díaz, 2004; Teruel & Armas, 2006;

Teruel & Roncallo, 2007; Teruel & Rodríguez, 2008; Teruel & Chazal, 2010; Teruel & Kovařík, 2012; Kovařík & Teruel, 2014; Teruel et al., 2015), the redescrptions of seven poorly known species (Teruel, 2000a,b; Teruel & Díaz, 2004; Teruel & Armas, 2006; Teruel & Cala, 2006; Teruel & Rodríguez, 2008), the revalidation of five species that were incorrectly regarded earlier as junior synonyms (Teruel, 2000b; Teruel & Armas, 2006; Teruel & Rodríguez, 2008; Teruel & Rodríguez-Cabrera, 2017) and the synonymizations of other three species (Teruel, 2009). Most of these papers also include updates of the geographical distribution and important data on the natural history of every species.

As a part of these continued studies, representative samples of *Didymocentrus* from Martinique and Saint Lucia were obtained and carefully compared. This revealed consistent differences between both populations, which exceed the intrapopulation variation observed for each one and affect those characters currently used as species-level diagnostic in the genus, thus, we concluded that the Martinique population represents a separate species. Because there is no previous name introduced in the taxonomic literature for it, we formally describe it here.

Methods, Material & Abbreviations

To avoid unnecessary duplication of data already available in recent catalogues and compilations (e.g., Armas, 1988; Sissom & Fet, 2000), for each taxon only the most relevant taxonomic references were cited, such as the original description and subsequent nomenclatural changes.



Figures 1–3. *Didymocentrus martinicae* sp. n., male paratype (1), male holotype (2) and female paratype (3), habitus: **a**) dorsal; **b**) ventral. See size variation between both males. Scale bar: 10 mm.

Specimens were studied under an AmScope SM-1T-PL LED trinocular microscope, equipped with an ocular line-scale calibrated to 20x for measuring. Nomenclature and measurements follow Stahnke (1971) except for trichobothriotaxy (Vachon, 1974), metasomal carinae (Francke, 1977), pedipalp chela carinae (Acosta et al., 2008, *sensu* Armas et al., 2011), and sternum (Soleglad & Fet, 2003a). Unless otherwise noted, all characters mentioned refer to adults of both sexes and total length includes telson. Pectinal tooth counts were given as fractions for left/right pectines. Leg segments nomenclature and armature corresponds to Santibáñez-López et al. (2013), *sensu* Teruel (2013).

All photographs were taken with a Nikon Coolpix B500 digital camera. The images were processed with Adobe Photoshop CS5, only for contrast and brightness optimization, removal of artifacts and/or unnecessary details from background and plate composition.

Localities were ordered from north to south and west to east, to make geographical orientation and map interpretation easier to the reader. The name of each locality and the administrative entities where it belongs to, adheres to the official political-administrative division current for each country.

Specimens studied herein are all preserved in ethanol 80% and housed in the personal collection of the first author (RTO) and the Père Pinchon Museum of Martinique (PPM). All labels at the former repository are either handwritten or laser-printed in Spanish, but were transcribed into English here for text coherence.

As comparative material, the following specimens of *D. leseurii* were studied, all collected at the type locality defined by Francke (1978: 6), i.e., the island of Saint Lucia: Saint Lucia, Castries District, Barre de L'Isle Rainforest Trail, 13°55'14"N 60°57'33"W, 300 m a. s. l., under leaf litter, 15 December 2015, coll. L. Smith, 1♂ (RTO); Anse-la-Rayé District, Anse-la-Rayé, 13°56'26"N 61°02'34"W, 50 m a. s. l., 25 December 1958, coll. P. Pinchon, 1♂1♀ (PPM, examined from high-resolution color photographs); Soufrière District, western slope of Gros Piton, 13°48'29"N 61°04'30"W, 150 m a. s. l., 3 April 1994, coll. C. Starr, 1♀1juv.♂ (RTO: Sco-0219); Vieux Fort District, Maria Major Island, 13°43'28"N 60°55'55"W, 40 m a. s. l., 6 April 1994, coll. C. Starr, 1♂ (RTO: Sco-0457).

Systematics

Didymocentrus martinicae sp. n.

(Figures 1–13, Tables 1–2)

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Didymocentrus leseurii: Francke, 1978: 6–8, 21–22, 56 (misidentification: specimens from Martinique). Armas, 1982: 5; tab. 2 (misidentification: record from Martinique); Armas, 1988: 27, 92; append. 2 (misidentification: record from Martinique); Sissom & Fet, 2000: 335

(misidentification: record from Martinique); Soleglad et al., 2005: 5, 27; tab. 5 (misidentification: specimen from Martinique); Kamenz & Prendini, 2008: 12, 19, 30, 42; pl. 141a; fig. 10; tab. 2 (misidentification: specimens from Martinique); Santibáñez López, 2012: 134–136, 139, 160–161, 164, 186, 202, 222; figs. 4c, 5c, 6a, 12–13; tab. 2 (misidentification: specimens and records from Martinique); Santibáñez-López et al., 2014: 259–260, 273; tabs. 1–2 (misidentification: specimens from Martinique); Dupré, 2016: 17, 59 (misidentification: records from Martinique and Ramiers).

Didymocentrus leseurii [incorrect subsequent spelling]: Soleglad & Fet, 2003a: 6 (misidentification: specimen from Martinique); Soleglad et al., 2005: 5, 27, tab. 5 (misidentification: specimen from Martinique); Fet et al., 2006: 3, 10; tab. 3 (misidentification: specimen from Martinique).

TYPE LOCALITY AND TYPE DEPOSITORY. **Martinique**, Saint Pierre District, Le Prêcheur, Case Roland, 14°48'27"N 61°12'49"W, 150 m a. s. l., RTO.

TYPE MATERIAL. **Martinique**, Saint Pierre District, Le Prêcheur, Case Roland, 14°48'27"N 61°12'49"W, 150 m a. s. l., 11 December 2011, coll. K. Questel, P. Maréchal, 1♂ (holotype, RTO: Sco-0519); Le Marin District, Les Trois-Îlets, Génipa Bay, Gros Îlet, 14°32'59"N 60°01'08"W, 10 m a. s. l., 15 June 2013, coll. A. Fong, C. Carracedo, 1♂ (paratype, RTO); Rivière Pilote, Rocher Zombis, 14°29'16"N 60°53'24"W, 170 m a. s. l., 10 December 2011, coll. K. Questel, C. Rodríguez, 1♀ (paratype, RTO: Sco-0520).

ADDITIONAL MATERIAL EXAMINED. **Martinique**, La Trinité District, La Digue, 14°42'06"N 60°57'23"W, 130 m a.s.l., 11 April 1955, coll. P. Pinchon, 1♀ (PPM). Le Marin District, Îlet-à-Ramiers, 14°32'39"N 61°04'44"W, 10 m a.s.l., 14 October 1953, coll. P. Pinchon, 1♂ (PPM). Morne Castagne, 29 December 1954, coll. P. Pinchon, 1♀ (PPM). Note: examined from high-resolution color photographs.

ETYMOLOGY. The selected epithet is a Latinized noun in the genitive case, taken from the most widely used current name for the island where this species occurs.

DIAGNOSIS. Adult size large for the genus (39–44 mm in male, 44 mm in female), male essentially as large as same size-class female. Adult coloration: base dark reddish brown, very densely infuscate all over (so the entire scorpion looks entirely blackish to unaided eye), legs, venter and posterior area of carapace and tergites contrastingly paler in male only, chelicerae finely and sparsely reticulate, legs faintly to moderately infuscate in male, densely infuscate in female. Pedipalps not especially elongate (length/width ratio of femur, patella and chela = 2.00–2.10, 2.51–2.60 and 3.46–3.85 in male, 1.75, 2.33 and 3.25 in female); chelae with manus larger, compressed, more strongly carinate and densely

<i>D. martinicae</i> sp. n.		♂ paratype Gros Îlet	♂ holotype Case Roland	♀ paratype Rivière Pilote
Dimensions (mm)				
Carapace	L / W	5.05 / 5.05	5.40 / 5.40	5.60 / 6.00
Mesosoma	L	12.00	13.05	14.80
Tergite VII	L / W	2.70 / 4.50	2.80 / 4.90	3.30 / 5.60
Metasoma	L	17.45	20.4	18.80
Segment I	L / W / D	2.70 / 3.08 / 2.15	3.10 / 3.30 / 2.28	2.90 / 3.30 / 2.60
Segment II	L / W / D	3.00 / 2.60 / 2.05	3.40 / 2.88 / 2.20	3.20 / 3.00 / 2.45
Segment III	L / W / D	3.10 / 2.48 / 1.95	3.60 / 2.70 / 2.20	3.40 / 2.90 / 2.30
Segment IV	L / W / D	3.60 / 2.20 / 1.95	4.30 / 2.38 / 2.20	3.90 / 2.55 / 2.30
Segment V	L / W / D	5.05 / 2.10 / 1.85	6.00 / 2.15 / 2.00	5.40 / 2.40 / 2.20
Telson	L	4.45	5.10	5.20
Vesicle	L / W / D	3.05 / 2.07 / 1.80	3.60 / 2.22 / 1.97	3.80 / 2.70 / 2.25
Aculeus	L	1.40	1.50	1.40
Pedipalp	L	17.20	19.80	19.00
Femur	L / W	3.80 / 1.90	4.40 / 2.10	3.85 / 2.20
Patella	L / W	4.40 / 1.75	5.00 / 1.92	4.90 / 2.10
Chela	L	9.00	10.4	10.25
Manus	L / W / D	3.30 / 2.60 / 4.55	3.70 / 2.70 / 5.00	4.05 / 3.15 / 5.05
Movable finger	L	5.70	6.70	6.20
Pectinal teeth number	Le / Ri	10 / 9	9 / 9	8 / 8
Total	L	38.95	43.95	44.40

<i>D. lesueurii</i>		♂ topotype Maria Major Is.	♂ topotype Barre de L'Isle	♀ topotype Gros Piton
Dimensions (mm)				
Carapace	L / W	5.20 / 5.50	5.85 / 6.00	5.60 / 5.90
Mesosoma	L	14.00	15.75	14.80
Tergite VII	L / W	3.00 / 4.95	3.10 / 5.20	3.10 / 5.30
Metasoma	L	18.90	19.85	18.10
Segment I	L / W / D	2.90 / 3.57 / 2.40	2.90 / 3.60 / 2.50	2.70 / 3.30 / 2.35
Segment II	L / W / D	3.20 / 3.00 / 2.50	3.30 / 3.10 / 2.50	3.05 / 2.90 / 2.20
Segment III	L / W / D	3.50 / 2.90 / 2.50	3.60 / 2.90 / 2.40	3.30 / 2.75 / 2.30
Segment IV	L / W / D	4.00 / 2.60 / 2.50	4.20 / 2.60 / 2.40	3.85 / 2.50 / 2.20
Segment V	L / W / D	5.30 / 2.35 / 2.30	5.85 / 2.45 / 2.30	5.20 / 2.40 / 2.20
Telson	L	4.95	5.20	5.00
Vesicle	L / W / D	3.55 / 2.40 / 1.95	3.70 / 2.50 / 2.05	3.50 / 2.50 / 2.00
Aculeus	L	1.40	1.50	1.50
Pedipalp	L	17.55	20.30	18.80
Femur	L / W	4.10 / 2.00	4.50 / 2.20	4.05 / 2.00
Patella	L / W	4.70 / 1.90	5.30 / 2.25	4.80 / 2.30
Chela	L	8.75	10.50	9.95
Manus	L / W / D	3.10 / 2.90 / 4.90	4.00 / 3.80 / 5.40	3.70 / 3.55 / 5.00
Movable finger	L	5.65	6.50	6.25
Pectinal teeth number	Le / Ri	10 / 10	9 / 9	9 / 9
Total	L	43.05	46.65	43.50

Table 1. Comparative measurements of adults of two Lesser Antillean species of *Didymocentrus*. Abbreviations: length (L), width (W in carapace it corresponds to posterior width), depth (D), left (Le), right (Ri).

setose in male (length/width ratio = 1.27–1.37 in male, 1.29 in female), fingers moderately long (movable finger/manus length ratio = 1.73–1.81 in male, 1.53 in female), lobe/notch combination obsolete. Tegument of carapace and tergites sexually dimorphic between adults: very finely and densely granulose in male vs. smooth, glossy and densely punctate in female. Legs smooth and glossy; modal formula of telotarsal spiniform setae 3/3 : 4/4 : 5/5 : 5/5. Pectines with 9–10 teeth (mode 9) in male, 8 in female. Metasoma slightly slender in male vs. robust in female (length/width ratio of segments I–V = 0.88–0.94, 1.15–1.18, 1.25–1.33, 1.64–1.81 and 2.40–2.79 vs. 0.88, 1.07, 1.17, 1.53 and 2.25), densely setose, with 10/10/10/8/5 complete to almost complete carinae (lateral inframedians indistinct to absent on distal half of IV–V), dorsal laterals and lateral supramedians finely and irregularly denticulate in male, weakly and coarsely granulose in female; intercarinal tegument smoother and glossier in female. Telson with vesicle elongate in male, globular in female (length/width ratio = 1.47–1.62 in male, 1.41 in female), subaculear tubercle smooth.

DESCRIPTION (adult male holotype; Figs. 2, 4, 6, 8, 10, 12a; Tabs. 1–2). **Coloration** (Fig. 2, 12a) base dark reddish-brown, slightly paler on pedipalps, contrastingly paler on posterior margin of carapace and tergites (as transverse bright-reddish stripes), as well as on chelicerae, legs and venter (dark yellowish-brown). Chelicerae manus finely reticulate with dark brown, denser distally; fingers faintly infusate. Pedipalp femur, patella and chela only faintly and irregularly infusate dorsally and externally, with all carinae moderately infusate; manus with internodistal depression and base of most trichobothria much paler (yellowish); fingers with basal half faintly infusate. Carapace symmetrically and densely spotted with dark brown, anterior and posterior margins broadly and deeply infusate; eyes and ocular tubercles black. Tergites symmetrically and densely spotted with dark brown, fainter and sparser along midline; posterior margin narrowly and deeply infusate. Pectines pale yellowish, immaculate, with basal portion and basal plate progressively darker due to heavier sclerotization. Sternites immaculate, with posterior area much paler, translucent yellowish. Legs faintly and irregularly infusate dorsally and externally on all segments except coxa, trochanter and tarsi. Metasoma concolor all along (i.e., no segments conspicuously darker), only with carinae variably infusate and faint, irregular infuscation all over segments IV–V (fading dorsally). Telson vesicle very faintly and irregularly infusate all over (fading distally), with four pale stripes corresponding to longitudinal furrows; aculeus with distal half blackish.

Chelicerae (Fig. 6a). Dentition typical for the genus, teeth large and sharp. Tegument smooth, glossy and sparsely punctate. Setation very dense ventrally, but essentially lacking dorsally, i.e., reduced to three large, dark macrosetae arranged into a transverse row distally in manus and to less than 10 translucent setae scattered on movable finger only. Fingers long, slender, evenly curved and unequal (movable longer).

Pedipalps (Fig. 4). Not especially elongate (3.67 times longer than carapace) and robust. Trichobothrial pattern C, orthobothriotaxic. Femur wider than deep, dorsal and internal surfaces almost flat, ventroexternal surface concave; dorsointernal and ventrointernal carinae complete (moderate, irregularly granulose), dorsoexternal carina distinct on basal half only (moderate, irregularly granulose), ventroexternal carina absent; tegument smooth, glossy and densely punctate, dorsal surface with a close group of variously-sized granules medially. Patella markedly deeper than wide, dorsal and external surfaces shallowly convex, internal surface shallowly concave, ventral surface flat; dorsointernal, ventrointernal and ventroexternal carinae complete (strong, subgranulose to subcostate), all other carinae complete but inconspicuous (obsolete to weak, costate); tegument smooth, glossy and densely punctate, internal surface minutely and densely granulose. Chela with two large, conspicuous, distal depressions near the base of fixed finger: one on external surface (irregular, shallower and not distinctly colored), another on internal surface (round, deeper and much paler, yellowish); manus large and remarkably compressed (length/width ratio = 1.37, length/depth ratio = 0.74), distally narrower in dorsal view, sparsely setose and prismatic in cross-section, dorsal marginal, dorsal secondary, external secondary and ventroexternal carinae complete (very strong –the latter the most–, coarsely subcostate), all other carinae incomplete and inconspicuous (obsolete to weak, subcostate), tegument glossy, weakly reticulate dorsoexternally, moderately granulose dorsointernally and densely punctate on all surfaces (except over reticulations); fingers moderately long for the genus (movable 1.81 times longer than underhand), evenly curved and densely setose, basal lobe/notch combination obsolete.

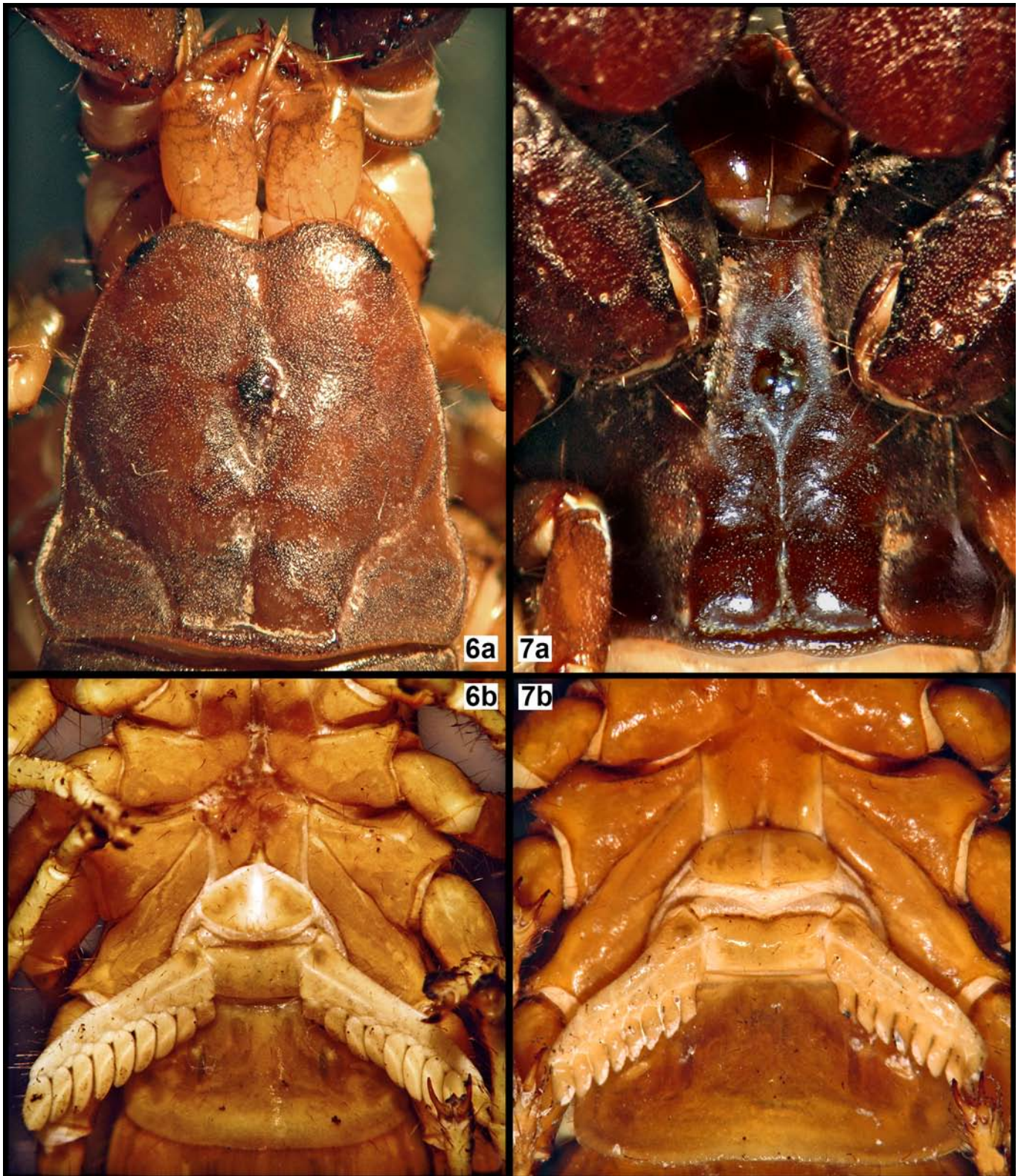
Carapace (Fig. 6a). Exactly as long as wide (length/width ratio = 1.00), paraboloid in dorsal view. Anterior margin bilobed, with 5–7 macrosetae plus several minor setae along each frontal lobe; median notch widely V-shaped, moderately deep. Tegument minutely, evenly and very densely granulose, with smooth areas symmetrically scattered all over and punctate along median part of posterior margin. All carinae indistinct or absent. Furrows: anterior median, lateral oculars, central median, posterior median and posterior marginal narrow and shallow to moderately deep, irregularly fused altogether; lateral centrals, central transverse and posterior transverse vestigial, wide and shallow; posterior laterals narrow and moderately deep. Median ocular tubercle teratological, i.e., only feebly raised, with eyes very small (left vestigial) and separated by about more than one ocular diameter; three pairs of large lateral eyes.

Sternum (Fig. 6b). Standard for the genus: type 2, large, longer than wide and hexagonal in shape, with 5–6 pairs of macrosetae and some minor setae scattered. Tegument smooth, glossy to coriaceous and densely punctate.

Genital operculum (Fig. 6b). Large and prominent. Halves not separated nor fused and roundly subtriangular in shape, with 5–7 pairs of dark macrosetae and some minor setae scattered; tegument. Genital papillae medium-sized, only



Figures 4–5. *Didymocentrus martinicae* sp. n., male holotype (4) and female paratype (5), pedipalp patella and chela: a) dorsoexternal; b) ventrointernal.



Figures 6–7. *Didymocentrus martinicae* sp. n., male holotype (6) and female paratype (7): a) chelicerae and carapace; b) sternopectinal region.

slightly protruding, with tips blunt, conical. Pre-pectinal plate absent.

Pectines (Fig. 6b). Size and shape standard for the genus: slightly surpassing coxa-trochanter joint of leg IV, subrectangular and moderately setose, anterior area with three lamellae, median area with 4/5. Tooth count 9/9, teeth swollen, almost straight

and basally separated; fulcra smooth, glossy to coriaceous and vestigially punctate very large and bulky, round to paraboloid. Basal plate wider than long, with 5–6 pairs of dark macrosetae and some minor setae scattered; anterior margin widely and shallowly notched medially, posterior margin straight; tegument smooth, glossy to coriaceous and weakly punctate.



Figures 8–9. *Didymocentrus martinicae* sp. n., male holotype (8) and female paratype (9), tergites.

Legs (Fig. 2). Size and slenderness standard for the genus, with all carinae absent or indistinct; tegument smooth, glossy to coriaceous and densely punctate, except for dorsal edge of femur minutely granulose. Prolateral pedal spurs standard-sized. Telotarsi with spiniform setal formula impossible to count, because the ventral surface of telotarsi and ventral tip of basitarsi are thickly covered with a black and extremely dense substance (solidified asphalt?), which could not be removed after repeated attempts using fine forceps, needles and mild solvents. Claws moderately long (about one-third the length of its respective telotarsus) and well-curved.

Mesosoma (Fig. 8). Tergites almost bare, anterior margin very shallowly biconcave, posterior margin shallowly to moderately convex; I–VI acarinate, VII with two very short and finely crenulate pairs of carinae (submedians and laterals) and a depressed, rectangular medioposterior area; tegument minutely, evenly and very densely granulose, with inconspicuous smooth areas symmetrically scattered all over and with slightly coarser granules scattered mostly along posterior margin, pretergites smooth, glossy and weakly punctate. Sternites densely setose (especially along posterior and lateral margins), posterior margin shallowly convex (III–IV), essentially straight (V) or shallowly concave (VI–VII);



Figures 10–11. *Didymocentrus martinicae* sp. n., male holotype (10) and female paratype (11), metasoma and telson: **a)** dorsal; **b)** lateral; **c)** ventral.

Ratio	<i>Didymocentrus martinicae</i> sp. n.		<i>Didymocentrus lesueurii</i>	
	♂ (n = 2)	♀ (n = 1)	♂ (n = 2)	♀ (n = 1)
Carapace (L/W)	1.00	0.93	0.95–0.97	0.95
Pedipalp Manus (L/W)	1.27–1.37	1.29	1.06–1.07	1.04
Metasomal segment I (L/W)	0.88–0.94	0.88	0.80–0.81	0.82
Metasomal segment II (L/W)	1.15–1.18	1.07	1.06–1.07	1.05
Metasomal segment III (L/W)	1.25–1.33	1.17	1.21–1.24	1.20
Metasomal segment IV (L/W)	1.64–1.81	1.53	1.54–1.62	1.54
Metasomal segment V (L/W)	2.40–2.79	2.25	2.26–2.39	2.17
Metasomal segment I (L/D)	1.26–1.36	1.12	1.16–1.21	1.15
Metasomal segment II (L/D)	1.46–1.55	1.31	1.28–1.32	1.39
Metasomal segment III (L/D)	1.59–1.64	1.48	1.40–1.50	1.43
Metasomal segment IV (L/D)	1.85–1.95	1.70	1.60–1.75	1.75
Metasomal segment V (L/D)	2.73–3.00	2.45	2.30–2.54	2.36
Total (L) / Metasoma (L)	2.15–2.23	2.36	2.27–2.35	2.40

Table 2. Comparison between adults of two Lesser Antillean species of *Didymocentrus*, based upon 13 selected morphometric ratios. Abbreviations: length (L), width (W), depth (D).

III–VI acarinate, tegument smooth, glossy to coriaceous and densely punctate, spiracles small, elongate-oval; VII with two pairs of weak to moderate, coarsely subcostate, parallel carinae (submedians and laterals), tegument smooth, glossy to coriaceous and densely punctate.

Metasoma (Fig. 10). Size and shape standard for the genus: slightly elongate and slender (length/width ratio of segments I–V = 0.94, 1.18, 1.33, 1.81 and 2.79), markedly narrower distally and densely setose; segment I wider than long, II–V longer than wide; all segments wider than deep. Segments I–III with ten complete to almost complete carinae, IV with eight, V with five: dorsal laterals moderately strong, finely, irregularly denticulate on I–IV, absent from V; lateral supramedians moderately strong, finely, irregularly denticulate on I–V; lateral inframedians weak, irregularly and coarsely subcrenulate on I–III, present only as a row of isolated coarse granules on basal half of IV–V; ventral laterals essentially parallel on I–III, distally divergent on IV–V, strong, coarse, costate on I, subcrenulate on II–III, subserrate on IV and dentate on V; ventral submedians coarse, moderately strong and costate on I–II, weak and subcostate on III–IV, absent on V; ventral median carina absent on I–IV, strong, irregularly bifurcate distally beyond the ventral transverse carina, which is strong, arcuate and coarsely dentate; anal arc coarsely lobate; laterodistal lobes of V straight and blunt-triangular. Intercarinal tegument smooth, glossy to coriaceous and densely punctate, with only very few, inconspicuous granules scattered dorsolaterally and dorsally. Dorsal furrow complete, wide and shallow, progressively narrower distally.

Telson (Fig. 10). Densely setose except dorsally. Vesicle slender and depressed (1.62 times longer than wide, 1.13 times wider than deep); tegument smooth, glossy and densely punctate, with a few obsolete, coarse granules scattered ventrobasally and four smooth, shallow, longitudinal furrows; subaculear tubercle moderately large, conical, densely setose

and entirely smooth. Aculeus very short, sharp and strongly curved, with basal portion densely setose.

FEMALE (adult paratype; Figs. 3, 5, 7, 9, 11, 12b; Tabs. 1–2). Sexual dimorphism well-marked, differing from described male by: **1)** coloration darker and bleaker, with legs and posterior area of carapace and tergites not contrastingly paler; **2)** pedipalps more robust, especially the chela which is heavier and has carinae markedly weaker, so it is evenly convex (not prismatic) in cross section; **3)** carapace wider than long (length/width ratio = 0.93); **4)** tegument of carapace and tergites smooth, glossy and densely punctate; **5)** genital operculum with valves medially fused all along by a membrane; **6)** genital papillae absent; **7)** pectines smaller, with teeth shorter, narrower and fewer in number (8/8); **8)** metasoma wider, deeper, with carinae weaker (none finely denticulate) and with intercarinal tegument smoother and glossier; **9)** telson with vesicle shorter and wider, globular in dorsal and ventral views.

VARIATION. The adult male paratype closely matches the holotype described above in all taxonomically relevant morphological characters. The only exceptions are its smaller size (38.95 mm), pectinal tooth count 10/9 and pedipalps, metasoma and telson slightly less slender (see Fig. 1, Tabs. 1–2). Its telotarsal spiniform setae formula is 3/3 : 3–4/3–4 : 5/5 : 5/5. These differences fit well within the variability range recorded for other species of *Didymocentrus* well-studied (see, e.g., Teruel & Rodríguez, 2008) and are typical of a small mature male (i.e., one size-class smaller than the holotype). Apart from the sexually dimorphic characters described above, the female paratype has telotarsal spiniform setae formula: 3/3 : 4/4 : 5/5 : 5/5.

AFFINITIES. This species has long been confused with *D. lesueurii*, which occurs in the neighboring Lesser Antillean island of Saint Lucia and its satellite islets. Nevertheless, the



Figure 12. *Didymocentrus martinicae* sp. n., photographed alive when found: **a)** male holotype; **b)** female paratype, see also remains of millipedes, beetles and land snails preyed upon by the scorpion.

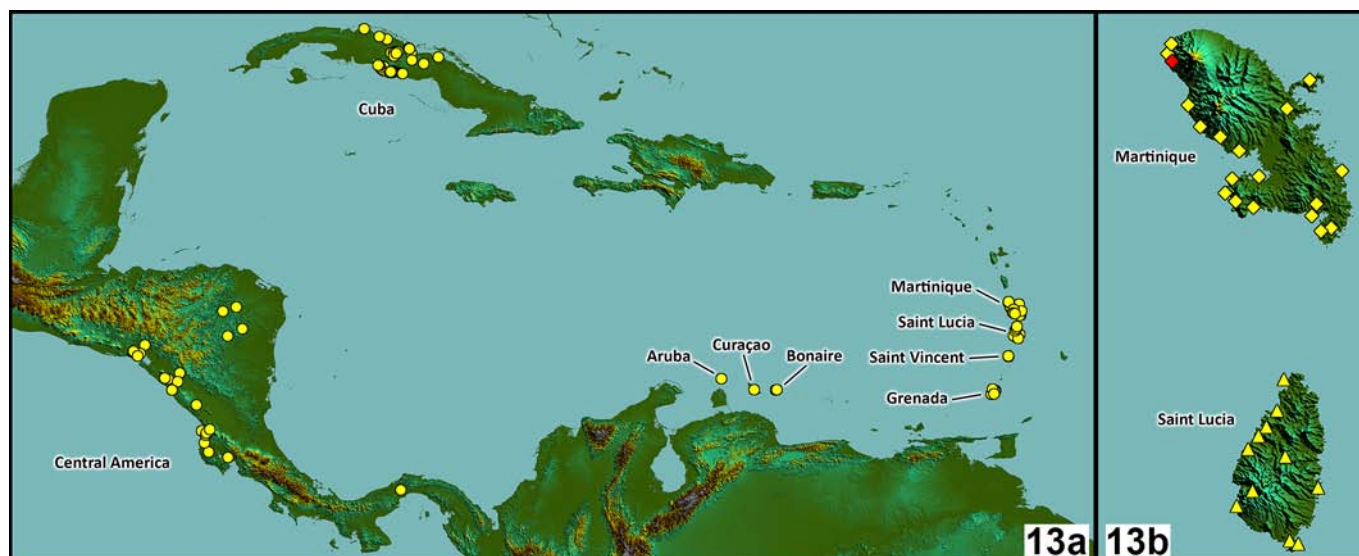


Figure 13. Updated geographical distribution of: **a)** the whole genus *Didymocentrus*; **b)** *D. martinicae* **sp. n.** (rhombs, type-locality in red) and *D. lesueurii* (triangles). Records include the complete literature published on the genus, plus numerous unpublished data of the present author. Image frames = 4,200 x 2,100 km (a) and 100 x 145 km (b).

latter can be safely separated by the following morphological characters that are standard in the species-level taxonomy of Diplocentridae: **1)** adult pedipalps shorter, more robust and with carinae weaker (especially in males); **2)** pedipalp manus in adult male bulkier; **3)** adult male metasoma with some carinae conspicuously weaker (e.g., ventral submedians of segment III and all of segment V); **4)** adult female metasoma only sparsely setose, with ventrolateral carinae weaker and with all intercarinal spaces almost flat to convex; **5)** adult female vesicle with ventral and lateral surfaces almost smooth (except basally).

Apart from these characters, both species show conspicuous differences in morphometric proportions of many body segments (Tab. 2). These proportions reveal that adults of *D. martinicae* **sp. n.** are in general slenderer (especially males) and possess secondary sexual dimorphism stronger (e.g., male and female length/width and length/depth ratios of metasomal segments never overlap, as opposite to *D. lesueurii*), which is evident even to unaided eye.

DISTRIBUTION (Fig. 13). *D. martinicae* **sp. n.** is endemic to Martinique, where it is widespread all over the main island, but apparently in coastal and subcoastal areas only. It also occurs in at least two of its small satellite islets: Gros Îlet and Îlet-à-Ramiers. See additional locality records in Francke (1978: 8) and Santibáñez-López et al. (2014: 273).

ECOLOGICAL NOTES. The type specimens were all collected under rocks semi-buried in the organic soil of shady and humid places, in tropical forest. It can be seen from the food remains found in their burrows that *D. martinicae* **sp. n.** preys readily upon small, hard-bodied invertebrates such as millipedes, beetles and land snails (Fig. 12b). This prey preference is typical of diplocentrine scorpions and has been frequently recorded elsewhere, including other species of this genus as well (see e.g., Teruel, 1997, 2006; Teruel & Díaz, 2004; Teruel & Kovařík, 2012).

Based upon the specimens examined herein and high-quality photographs made available to us by selfless collaborators, *D. martinicae* **sp. n.** lives sympatrically with *Tityus exstinctus* Lourenço, 1995 in all localities, including Îlet-à-Ramiers.

REMARKS. The morphological distinction between *D. martinicae* **sp. n.** and *D. lesueurii* is not so easy, but equals that found among other closely related species of *Didymocentrus* in the most recent and thorough revisionary studies of this genus (Francke, 1978; Teruel & Rodríguez, 2008). In fact, the external morphology of its members (both insular and continental) is the most conservative in the entire family. Because of this, the formal division of the genus into two species-groups by Francke (1978: 22–23) was abandoned less than a decade later, when additional taxa and specimens became available (Francke & Stockwell, 1987: 31). Coincidentally, a similar split of the Cuban species into two species complexes was proposed by Teruel & Rodríguez (2008: 76), but the analysis of abundant supplementary material of all implied taxa revealed it is no longer valid (R. Teruel & T. M. Rodríguez-Cabrera, unpublished).

On the other hand, diplocentrids are strictly soil-dwelling scorpions that live in self-dug burrows or inside cracks and crevices of rocky cliffs and steep taluses. Thus, their dispersal potential is very limited and most species are typically restricted in distribution to small, well-defined, continuous areas. Man-mediated accidental introduction and rafting over sea are not viable dispersal options for them, as opposite to other more opportunistic and/or generalist Antillean scorpions such as *Centruroides* Marx, 1890, *Isometrus* Ehrenberg, 1828, *Heteroctenus* Pocock, 1893 and *Tityus* C. L. Koch, 1836. This is especially evident in insular territories, where each species occurs only in a single main island and its satellite islets and cays on shallow waters, i.e., only those that were repeatedly interconnected by emerged land bridges during the major sea-level drops of the Pleistocene Glacial Maxima.

The main islands of Saint Lucia and Martinique are separated by the Saint Lucia Channel; it is only 32 km-wide in its narrowest point, but the bottom is more than 200 m-deep in its shallower points. The sea-level never dropped more than 120–140 m below present-day level during the Pleistocene Glacial Maxima (see e.g., Ali, 2011). Thus, both islands, which are otherwise volcanic in origin and about 43 million years old (Maury et al., 1990), were never connected by emerged land. In consequence, their *Didymocentrus* populations, although closely related, were always geographically (and thus, genetically) isolated from each other, despite the date their common ancestor reached each island. Similar examples of allopatric insular speciation have already been published for most diplocentrid genera occurring in the Caribbean: *Cazierius* (see Teruel et al., 2017), *Didymocentrus* (see Teruel & Rodríguez, 2008), *Diplocentrus* (see Sagastume-Espinoza et al., 2015), *Heteronebo* (see Francke & Sissom, 1980; Teruel & Díaz, 2004; Teruel et al., 2017; Teruel & Rodríguez-Cabrera, 2017), and *Oiclus* (see Teruel, 2008; Teruel & Chazal, 2010; Ythier, 2019).

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