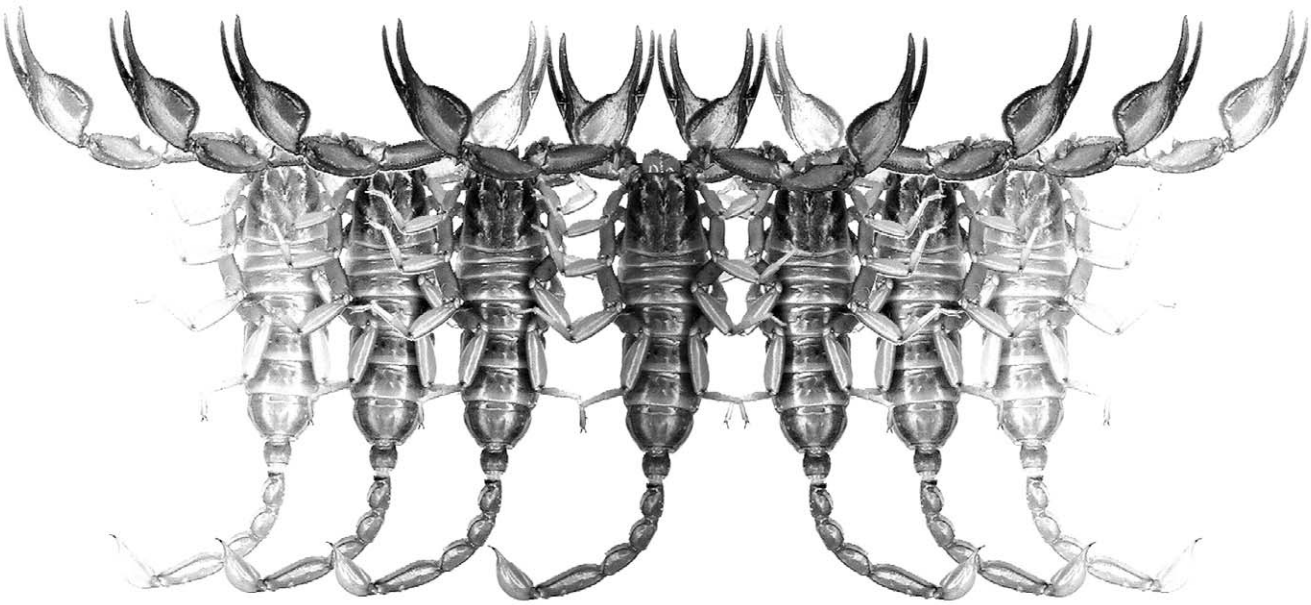
# Euscorpius

## Occasional Publications in Scorpiology

# A New Species of *Microtityus* from the British Virgin Islands, West Indies, and New Localities for Other Scorpions (Scorpiones: Buthidae, Scorpionidae)


**Luis F. de Armas**



**July 2018 – No. 264**

# *Euscorpius*

## Occasional Publications in Scorpiology

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*Euscorpius* — Occasional Publications in Scorpiology. 2018, No. 264

# A new species of *Microtityus* from the British Virgin Islands, West Indies, and new localities for other scorpions (Scorpiones: Buthidae, Scorpionidae)

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## Summary

*Microtityus* (*Parvabsonus*) *eustatia* sp. n. is herein described from the British Virgin Islands (West Indies): Eustatia Island (type locality), Virgin Gorda Island, and Camanoe Island, based on seven specimens (three males and four females). The new species closely resembles *M. waeringi* Francke & Sissom, 1980 from St. John Island and St. Thomas Island, U.S. Virgin Islands, differing mainly by the fixed finger of pedipalp having ten rows of denticles (nine in *M. waeringi*) and more attenuated metasoma. Also, new localities are recorded for *Heteronebo yntemai* Francke & Sissom, 1980 (Scorpionidae) and *Centruroides griseus* (C. L. Koch, 1844) (Buthidae).

## Introduction

The small buthid scorpions of the genus *Microtityus* Kjellesvig-Waering, 1966 were originally described from the Trinidad Island, South America (Kjellesvig-Waering, 1966), but a few years later they were discovered in eastern Venezuela (González-Sponga, 1970) and Cuba (Armas, 1974). At present, this genus is known from South America (Brazil, Colombia, Trinidad and Tobago, Venezuela) and the West Indies (Cuba, Hispaniola, Puerto Rico, U.S. Virgin Islands) (Fet & Lowe, 2000; Armas, 2001; Teruel et al., 2014, 2015). According to Armas & Teruel (2012), the South American species belong to the subgenus *Microtityus*, whereas the West Indian taxa are included in the subgenus *Parvabsonus* Armas, 1974. This genus contains some of the smallest known scorpions.

The scorpiofauna of the small islands belonging to the British Virgin Islands is composed by three species: *Isometrus maculatus* (De Geer, 1778), *Centruroides griseus* (C. L. Koch, 1844) (Buthidae), and *Heteronebo yntemai* Francke & Sissom, 1980 (Scorpionidae: Diplocentrinae). The first is an introduced taxon, whereas the others are Antillean endemics (Francke & Sissom, 1980; Armas, 2001).

In the present contribution, a new species of *Microtityus* (subgenus *Parvabsonus*) is described from the British Virgin Islands, and new localities are recorded for other two scorpion species in this West Indian archipelago: *Centruroides griseus* and *Heteronebo yntemai*.

## Methods & Material

Examined specimens are deposited in the Institute of Ecology and Systematics (IES), La Habana, Cuba, and the Montana Entomology Collection (MTEC), Montana State University, Bozeman, Montana, USA. They were examined and measured with an Olympus SZ30 stereoscopic microscope fitted with an ocular micrometer. Photos were obtained with a Cannon Power Shot A1100 camera manually adapted indistinctly to the Olympus stereomicroscope or an Olympus optical microscope. Digital images obtained were slightly processed with Adobe Photoshop CS8, only for optimizing brightness and contrast for print. The distribution map is based on Microsoft Encarta 2009.

Carinal terminology follows Stahnke (1971) for carapace, tergites and pedipalps (femur and patella), Francke (1977) for metasomal segments, and Acosta et al. (2008), as interpreted by Armas et al. (2011), for pedipalp chela carinae. Sternum nomenclature follows Soleglad & Fet (2003). Trichobothrial terminology follows Vachon (1974, 1975). As there is some confusion regarding the carapacial carinae nomenclature of the species belonging to the subgenus *Parvabsonus*, it is shown in Fig. 1.

Additional specimens examined:

*Microtityus waeringi* Francke & Sissom, 1980: US VIRGIN ISLANDS: *St. John Island*: (1) 1 ♂ (IES), March – April 1984, leg. W. B. Muchmore, pitfall trap. (2) National Park: Europa Trail: 1 ♂ (IES), 20 July, 1994, leg. M. S. Beker, Berlese leaf litter. *St. Thomas*

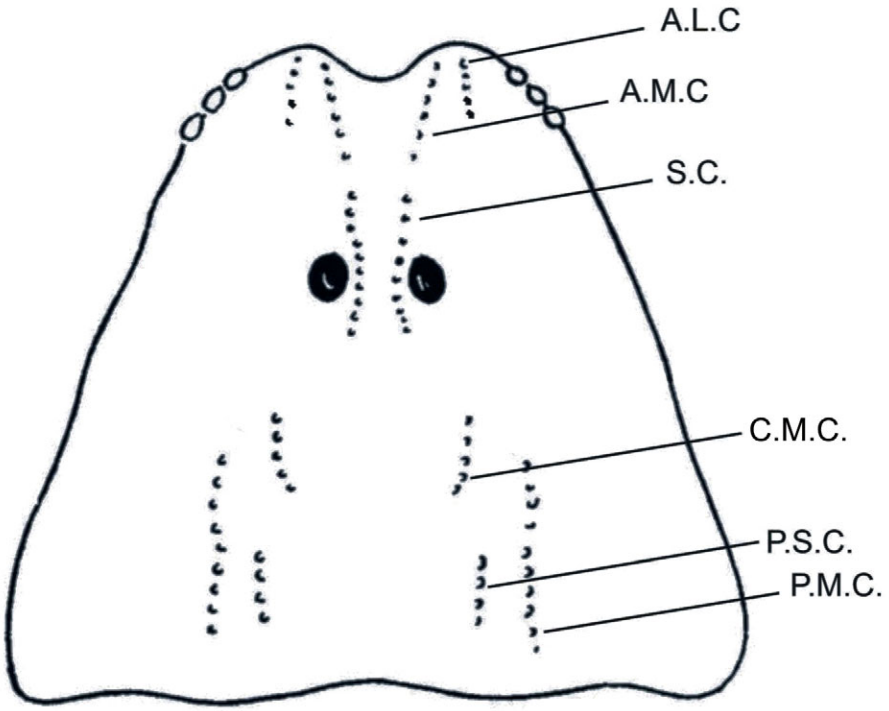



**Figure 1:** Carapacial carinae in species belonging to the genus *Microtityus* (subgenus *Parvabsonus*), modified from Armas (1974, fig. 4 A). Abbreviations: A.L.C.: anterior lateral carinae (a pair of short carinae between the anterior median carinae and the lateral eyes); A.M.C.: anterior median carinae; C.M.C.: central median carinae; P.M.C.: posterior median carinae; P.S.C.: posterior submedian carinae (a short pair of carinae between the posterior median carinae); S.C.: superciliary carinae.

*Island*: East Nazareth: July – 19 October, 1994, leg. M. A & L. L. Ivie, Fit # 9, 12.2 m a.s.l.

## Systematics

Family Buthidae C. L. Loch, 1837
Genus ***Microtityus*** Kjellesvig-Waering, 1966
Subgenus ***Parvabsonus*** Armas, 1974

***Microtityus* (*Parvabsonus*) *eustatia* Armas, sp. n.**
Figures 2–17, Table 1
**http://zoobank.org/urn:lsid:zoobank.org:act:E3407D78-BEBB-4C66-9029-4B68076EBED5**

TYPE DATA. BRITISH VIRGIN ISLANDS: *Eustatia Island* (18°30'41.5" N, 64°21'22.5 W): Trail to Hidden Beach: 1♀ holotype, 1♂ paratype (IES-3.3786), Spring 2017, leg. E. L. Speissberger. *Virgin Gorda Island* (18°28′54.8″ N, 64°23′20.95″ W): Biras Hill: 1 ♂ paratype (IES-3.3787), 09 November, 2016, leg. R. Winston, Winkler funnel of leaf litter under *Pisonia subcordata* Sw. *Great Camanoe Island*, (1) 18°28'30" N, 64°31'55" W, 2 ♀♀ paratypes (IES-3.3788), 11 July 1994, leg. M. A. Ivie, M. S. Becker and S. A. Bucklin, litter from dry forest; (2) Cam Bay, 18.4705°N, 64.5314° W; 3 m a.s.l., 1♀ 1♂ paratypes (MTEC), 11 July 1994, leg. M. A. Ivie, S. A. Bucklin & M. S. Becker.

DISTRIBUTION. Known only from the British Virgin Islands (Fig. 2).

ETYMOLOGY. The specific epithet is a noun in apposition, taken from the name of the Eustatia Island housing the type locality.

DIAGNOSIS. A small species (14–17 mm) that closely resembles *M. waeringi* Francke & Sissom, 1980, from which it clearly differs by having: (1) pedipalps fixed finger with ten rows of denticles (nine in *M. waeringi*); (2) metasoma somewhat more attenuate in both sexes (vesicle length/width ratio = 1.8 – 2.1 vs 1.5 – 1.6 in *M. waeringi*; (3) pectines with slightly higher tooth count (10-12 in the females and 12–13 in the males, whereas in *M. waeringi* females have 9–11 teeth, and males, 10–12); (4) darker pattern on the entire body. This new species differs from *M. vieques* Teruel, Rivera & Santos, 2015 from Vieques Island, southeastern Puerto Rico, and *M. santosi* Teruel, Rivera & Sánchez, 2016 from Culebrita (an islet near Culebra Island, northeastern Puerto Rico), by having a higher pectinal tooth count (9 in the female of *M. santosi*, 10 in both sexes of *M. vieques*). Also, female of *M. santosi* has the basal plate of the pectines wider than long, whereas in both sexes of *M. vieques* the basal middle lamella of the pectines is clearly enlarged.

FEMALE HOLOTYPE (Fig. 3, 5–6, 9–11, 13–17). Base color light yellowish brown, slightly paler on legs and

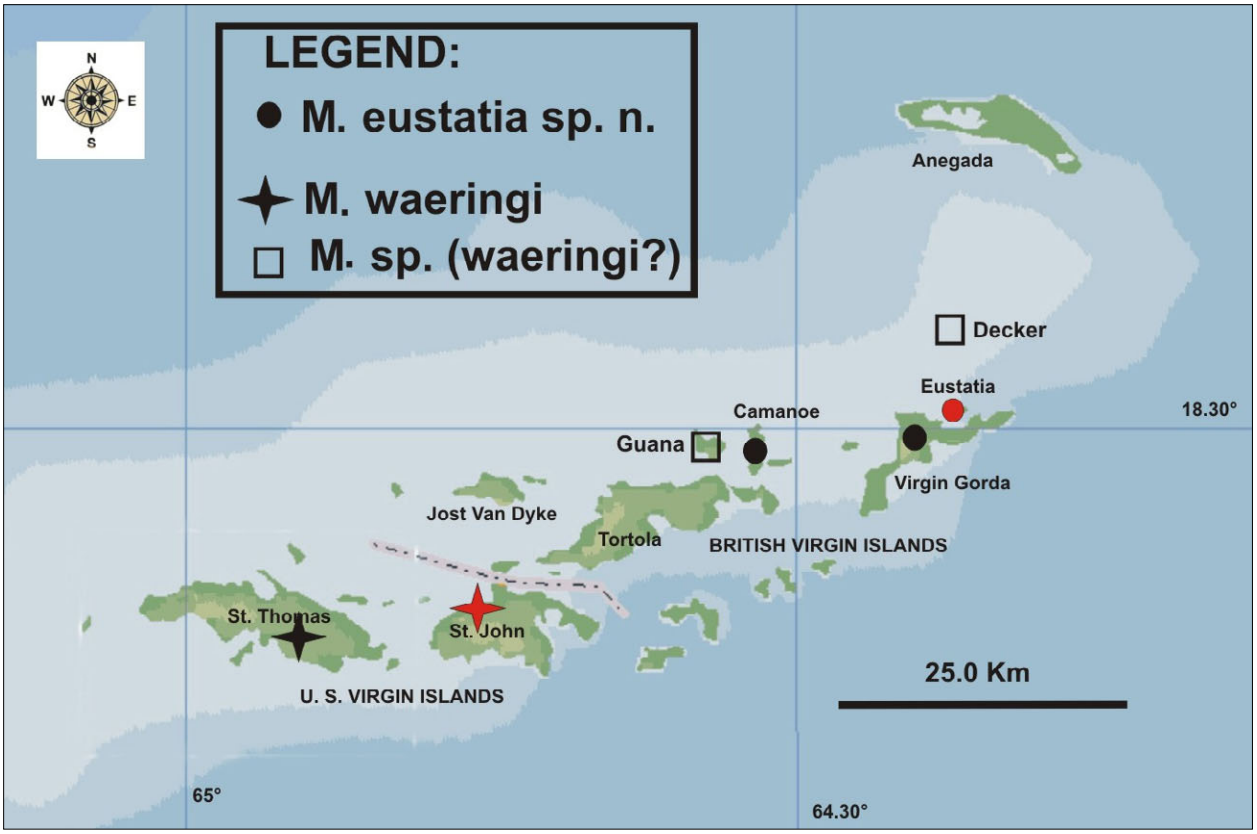



**Figure 2:** Geographical distribution of *Microtityus* (*Parvabsonus*) *eustatia* sp. n. and *M. waeringi*. Type locality in red.

venter and becoming slightly darker on metasomal segment V and telson, densely spotted with dark brown all over the body, appendages, pectines and the ventral region (Fig. 3, 5–6, 10). Chelicerae yellowish, with distal one-third of manus and basal half of fingers intensely infuscate and faint inner dark reticulations. Pedipalp femur very densely spotted with dark brown on all surfaces, except ventrally immaculate; patella very densely spotted with dark brown on all surfaces except ventral, which possesses spots only in the distal one-third and the external margin; chela with manus spotted on external surface and carinae; fingers strongly infuscate but with yellowish tips. Carapace densely spotted with dark brown; tergites densely spotted with dark brown, without clearly defined pattern of longitudinal dark bands; venter densely spotted with dark brown all over leg coxae, sternum, genital operculum, pectines (including basal plate and middle lamellae) and sternites (Figs. 5-6, 10). Legs with trochanter, femur and patella very densely spotted with dark brown externally, sparsely spotted both dorsally and ventrally, but immaculate internally, tibia and tarsi annulated: basal half blackish brown, distal half pale yellowish, most conspicuously on basitarsi. Metasoma strongly spotted with dark brown on all surfaces, slightly darker on segment V and telson.

**Carapace** subtriangular, 1.12 times wider than long. Anterior margin bilobed. Carinae: anterior median, anterior lateral, superciliary, central median, posterior submedian and posterior median granulose to subgranulose, other carinae obsolete to absent. Tegument finely and densely granulose. Median eyes separated by 1.07 times the ocular diameter; three pairs of lateral eyes.

**Mesosoma**. Tergites with the same granular sculpture as on carapace; I–VI with three longitudinal carinae, which are granulose and moderately projected beyond the posterior margin of every tergite (Fig. 9), VII with five finely serrate longitudinal carinae. Sternite III mostly coriaceous, laterally depressed with disperse small granules on anterior sub-margin, posterior margin slightly convex; IV–VII with two pairs of granulose longitudinal carinae (submedian and laterals), coriaceous on IV and finely granulose on V–VII (Fig. 10), with straight posterior margin on V–VI and a vestigially bilobed on IV; spiracles oblique and small, suboval to deltoid.

**Metasoma**. Segments I–II with ten carinae, III–IV with eight, V with five, all finely serrate to subserrate on I–IV, finely subcrenulate on V; dorsal lateral carinae with terminal denticle moderately enlarged and sharp on I–III, slightly enlarged and blunt on IV. Intercarinal


**Figures 3–4:** *Microtityus* (*Parvabsonus*) *eustatia* sp. n., dorsal aspect. 3. Female holotype (arrow indicates anomalous leg I); 4, male paratype from Eustatia Island.

spaces finely and densely granulose. Telson (Fig. 11): vesicle oval, smooth, with poorly developed ventral median carina, subaculear tubercle moderately-sized, subconical with its peak rounded, without dorsal granules; aculeus 0.8 times as long as the vesicle.

**Chelicerae**. Dentition typical of the genus. Tegument smooth, dorsally with coarse, lustrous granules irregularly arranged along the distal margin, which are accompanied by a few macrosetae.

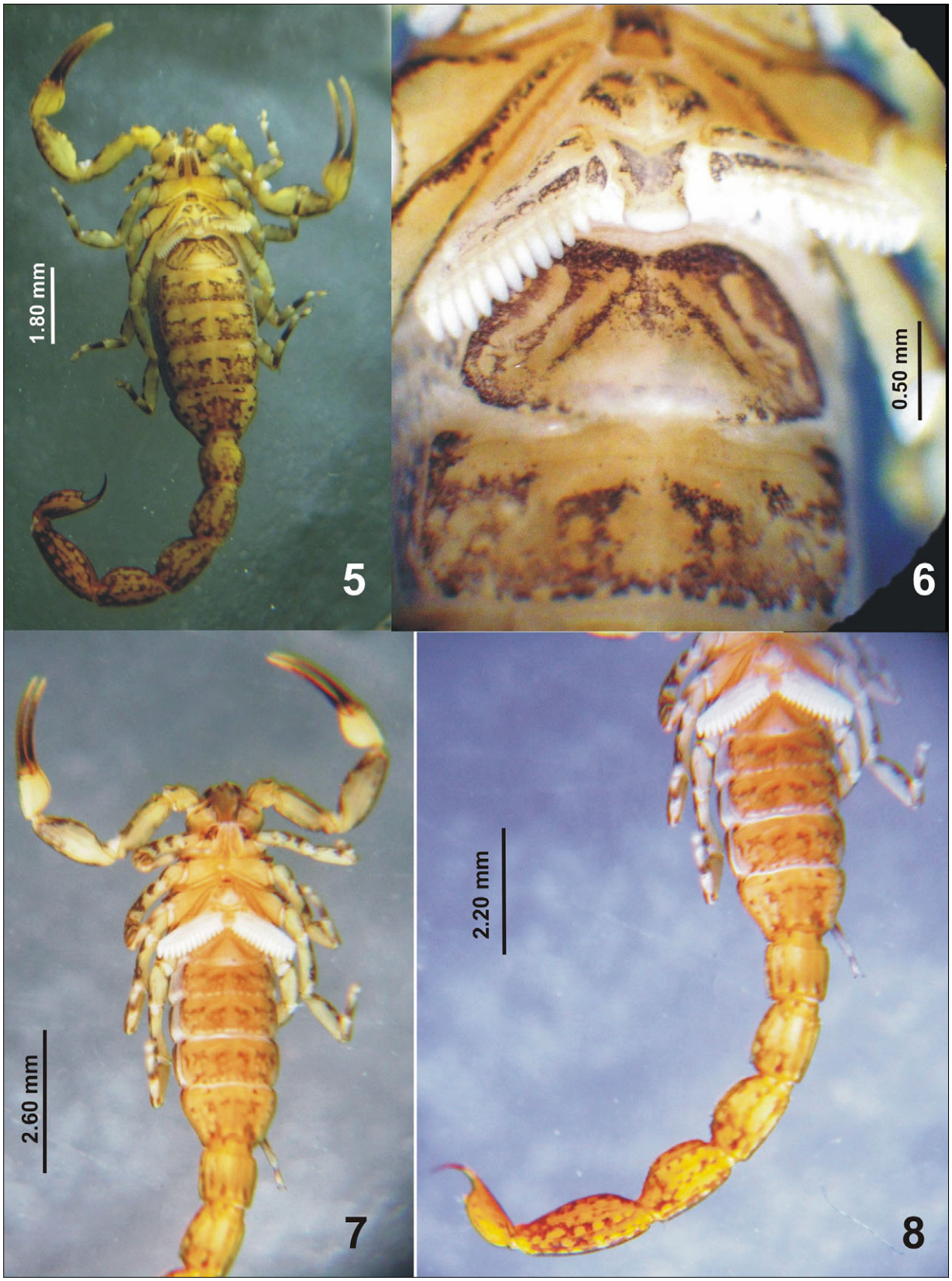
**Pedipalps** (Figs. 13–17). Orthobothriotaxic A-α (internal surface of the femur with $d_2$). Femur with five denticulate carinae, intercarinal spaces finely and densely granulose, with coarser granules dispersed, internal surface with the four internal ($i_{1-4}$) trichobothria surrounding a conical spur of moderate size. Patella with seven crenulate carinae, except the internal median which is serrate; intercarinal spaces with the same granular sculpture as on femur, internal surface with two spiniform denticles, being the distal the largest. Chela oval, 0.65 times as wide as the patella; manus with nine finely granulose to costate carinae, intercarinal spaces coriaceous to very finely granulose; fixed finger with 10 principal rows of denticles (Fig. 16); movable finger with 10 principal rows of denticles plus an apical subrow of four denticles (Fig 17), without basal lobe.

**Legs**. Slender, all carinae finely granulose to serrate; intercarinal spaces coriaceous to finely granulose, with dispersed coarser granules. **Sternum** type 1, small and pentagonal.

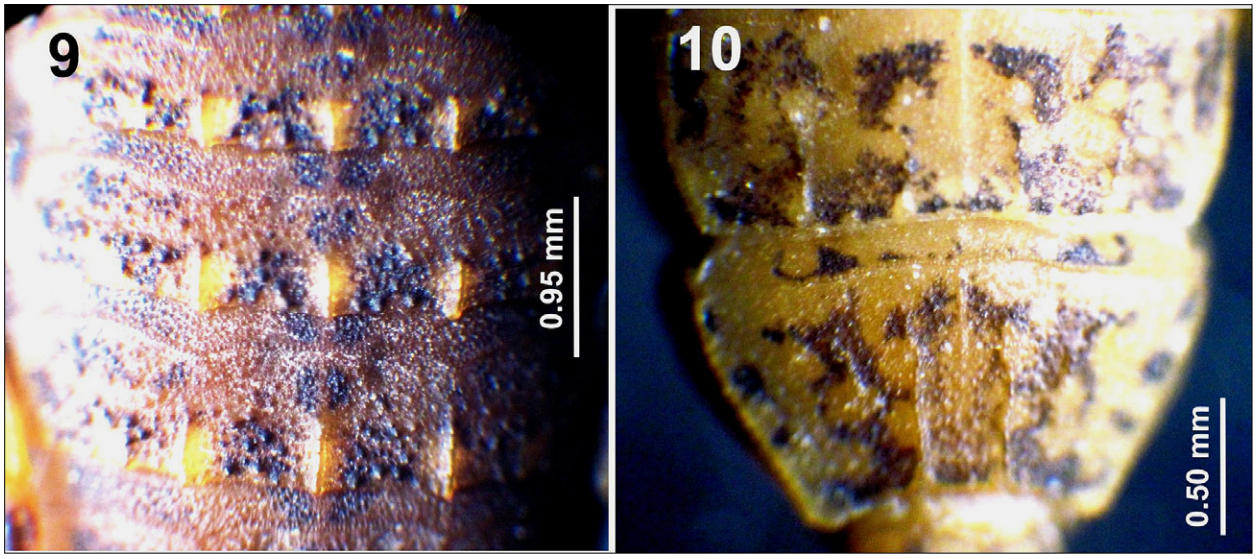
**Pectines** (Fig. 6). Rather small, not reaching the apex of leg IV trochanter; tooth count 11/12; basal middle lamella no enlarged, suboval. Basal plate subrectangular, longer than wide, posteriorly spatulate.

MALE (Figs. 4, 7–8, 12). Differs from the female in the following characters: (1) smaller in size (Table 1); (2) general pattern paler, with pedipalps manus and pectines immaculate; (3) genital papillae present; (4) basal plate of the pectines wider than long, not spatulate; (5) carapace as long as wide; (6) pectines longer, reaching the apex of the leg IV coxae; (7) mesosoma slender.

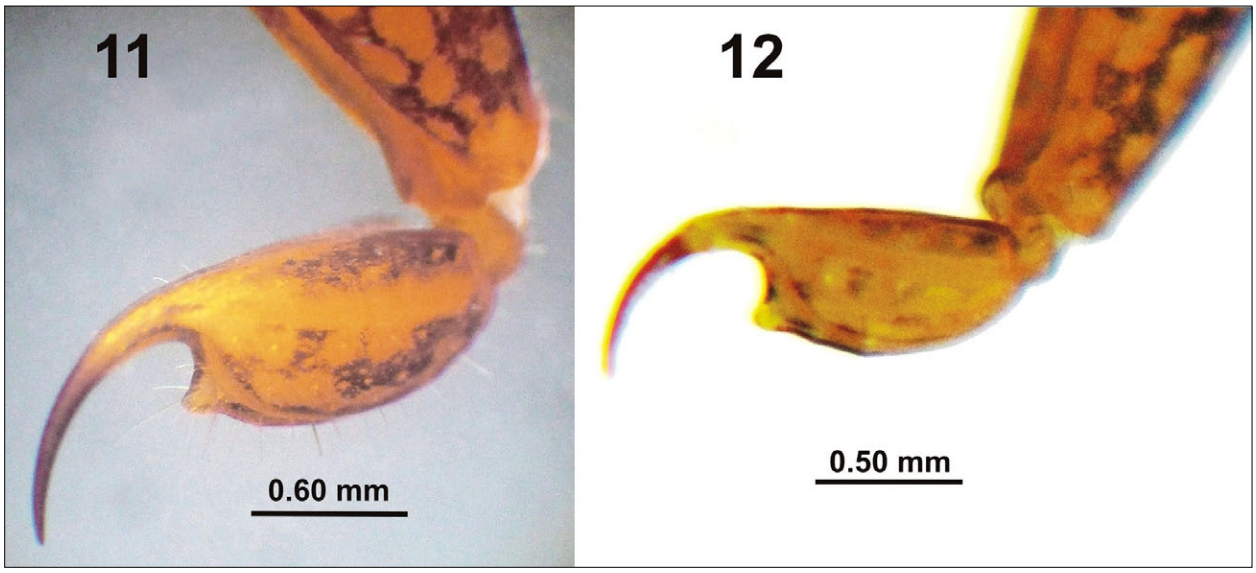
VARIATION. Pectinal tooth count varied as follows for females: 10 (1 comb), 11 (4 coms), 12 (3 combs); for males: 12 (1 comb), 13 (5 combs). One female paratype has basal plate of the pectines almost as wide as long. Both female paratypes have sternite III with posterior margin vestigially emarginate.




**Figures 5–8:** *Microtityus* (*Parvabsonus*) *eustatia* sp. n., ventral aspect. 5–6, Female holotype; 7–8, male paratype from Eustatia Island.




**Figures 9–10 :** *Microtityus* (*Parvabsonus*) *eustatia* sp. n. Female holotype. 9, tergites III – V; 10, sternites VI – VII.




**Figures 11–12:** *Microtityus* (*Parvabsonus*) *eustatia* sp. n. Telson, lateral aspect. 11. Female holotype; 12, male paratype from Eustatia Island.

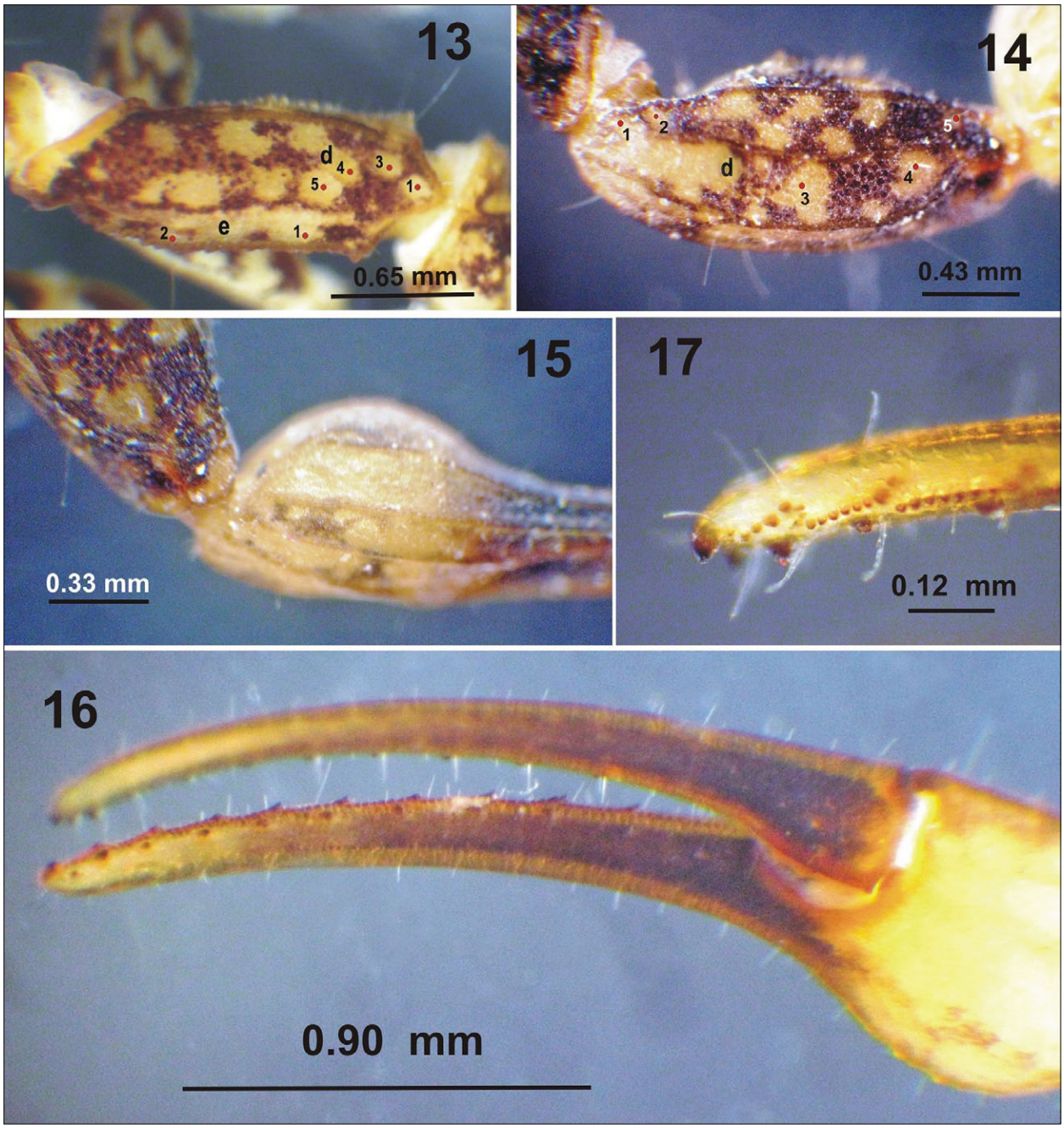
ANOMALOUS LEG. The right leg I of the holotype is very small (Fig. 3), having only four segments: coxa, trochanter, short and conical femur, short unidentified segment (tarsus?) and claws. Its origin is unknown, but perhaps it was caused by damage or loss of this leg during one of the early life stages and posteriorly underwent a partial regeneration.

NATURAL HISTORY. The type series was mainly collected in the litter of dry forests not higher than 100 m a.s.l., sympatrically with *Centruroides griseus* and *Heteronebo yntemai*. The specimen from Virgin Gorda was found in litter from water mampo tree (*Pisonia subcordata* Sw., Nyctaginaceae), at 93 m a.s.l. One of the females collected in July has well developed embryos.

## Genus *Centruroides* Marx, 1890

### *Centruroides griseus* (C. L. Koch, 1844)

NEW RECORD. BRITISH VIRGIN ISLANDS: *Anegada Island*: (1) The Fountain, north of the settlement: 1 ♀ (IES), 07 October 1994, leg. M. A. & L. L. Ivie. (2) Sea Cow Bay (4.9 m a.s.l.): one immature (nymph I) (IES), July – 07 October 1994, leg. M. A. Ivie & S. A. Bucklin. *Great Camanoe Island*: Cam Bay: 1 ♂ imma-




**Figures 13–17:** *Microtityus* (*Parvabsonus*) *eustatia* sp. n. Female holotype pedipalp. 13, Femur, dorsal aspect; 14, patella, dorsal aspect; 15, manus, dorsal aspect; 16, fixed finger showing rows of denticles; 17, movable finger, apical denticles.

ture (IES), 11 July 1994, leg. M. A. Ivie, S. A. Bucklin & M. S. Becker, 0 – 30.5 m a.s.l., lot 23. *Jost Van Dyke Island*: Northside Bay: 1 exuvia (IES), 24 July 1994, leg. M. A. Ivie, under stone.

COMMENTS. This species is widely distributed in the Virgin Islands, but this is the first record for Jost Van Dyke Island and the second adult specimen from Anegada Island, from where Sissom & Francke (1983) recorded a female and an immature specimen.

Family Scorpionidae
Subfamily Diplocentrinae
Genus *Heteronebo* Pocock, 1899

### ***Heteronebo yntemai*** **Francke & Sissom, 1980**

NEW RECORD. BRITISH VIRGIN ISLANDS: *Eustatia Island*: Trail to Hidden Beach (18.51148 N, 64. 35625 W, 5.2 m a.s.l.): 2 ♀♀ (IES), 08 May 2017,

| Characters | ♀ Holotype (Eustatia Island) | ♀ Paratype (Camanoe Island) | ♂ Paratype (Eustatia Island) |
|---|---|---|---|
| Total L | 16.90 | 15.25 | 14.65 |
| Carapace, L/Wp | 2.05/2.30 | 2.20/2.30 | 1.85/1.80 |
| Mesosoma, L | 5.50 | 5.25 | 4.15 |
| Tergite VII, L/W | 1.25/2.25 | 1.30/2.30 | 0.80/1.30 |
| Metasoma, L | 9.35 | 7.80 | 8.65 |
| Segment I, L/W/H | 0.95/1.10/1.00 | 0.90/1.15/1.05 | 0.95/1.04/0.95 |
| Segment II, L/W | 1.25/1.05 | 1.30/1.05 | 1.00/0.95 |
| Segment III, L/W | 1.35/1.00 | 1.45/1.00 | 1.20/0.90 |
| Segment IV, L/W | 1.55/0.95 | 1.65/1.00 | 1.55/0.85 |
| Segment V, L/W/H | 2.30/0.90/0.90 | 2.30/0.95/0.90 | 2.20/0.80/0.80 |
| Telson, L | 1.95 | 2.00 | 1.75 |
| Vesicle, L/W/H | 1.20/0.65/0.65 | 1.20/0.65/0.65 | 1.05/0.50/0.50 |
| Pedipalp, L | 6.65 | 6.90 | 5.60 |
| Femur, L/W/H | 1.65/0.65/0.45 | 1.75/0.55/0.50 | 1.40/0.45/0.35 |
| Patella, L/W | 1.90/0.85 | 2.05/0.80 | 1.60/0.65 |
| Chela, L | 3.10 | 3.10 | 2.60 |
| Hand, L/W/H | 0.96/0.65/0.65 | 1.00/0.70/0.65 | 0.75/0.50/0.50 |
| Movable finger, L | 1.90 | 2.05 | 1.80 |

**Table 1:** Measurements (mm) of *Microtityus* (*Parvabsonus*) *eustatia* sp. n. H, height; L, length; W, width; Wp, posterior width.

leg. E. L. Spiessberger. *Great Camanoe Island*: (1) Cam Bay: 1 ♀, 1 ♂ (IES), 11 July, 1994, leg. M. A. Ivie, S. A. Bucklin & M. S. Becker. 0 – 30.5 m a.s.l., lot 23. (2) 1 ♀ immature, 1 nymph I, (IES), 11 July 1994, leg. M. A. Ivie, S. A. Bucklin & M. S. Becker, Berlese litter. (3) Low Bay (167 m a.s.l.): 1 ♀ immature (IES), 17 October 1994, leg. M. A. & L. L. Ivie. *Jost Van Dyke Island*: Northside Bay: 1 ♀ (IES), 24 July 1994, M. A. Ivie, under stone.

COMMENTS. This is a widely distributed species in the Virgin Islands (Sissom & Francke, 1983), but this is the first record for Jost Van Dyke Island. All the examined specimens have pectines with 6/6 teeth, as described for the species.

## Discussion

The genus *Microtityus* is widely distributed along the Greater Puerto Rico Region, which includes Puerto Rico Island and the Virgin Islands (Santiago-Blay, 2009; Teruel et al., 2014, 2015). The only known records of these small scorpions for the British Virgin Islands are those of Valentine (2005: 240) and Lazell (2006: 43) who mentioned *M. waeringi* from Guana Island and Necker Island, respectively. Without examination of those specimens it is not possible to know their correct specific identity, but at least the Necker population might belong to *M. eustatia*. On the other hand, since some specimens of *Microtityus* have been collected in anthropogenic localities (Santiago-Blay, 2009: 115), accidental introduction in any of the islands must be not disregarded.

Currently, all the West Indian species of *Microtityus* are assigned to the subgenus *Parvabsonus*; perhaps in the future it will be necessary to elevate this subgenus to genus. Some members of the West Indian fauna have a long evolutionary history in this area and clearly differ from its closest continental relatives. *Microtityus* is not an exception, having a fossil species described from Hispaniolan amber (Armas, 1988; Santiago-Blay et al., 1990). As shown first by Armas (1974) and confirmed later (Armas, pers. observ.), all the known West Indian species of the subgenus *Parvabsonus* have a particular carapacial carination (Fig. 1) clearly differentiated from

that observed in the South American *Microtityus* species.

As pointed out by Armas & Marcano Fondeur (1992: 5), the biogeographic pattern of the genus *Microtityus* seems to be similar to that of other scorpion genera or species groups present in the Greater Antilles, such as *Rhopalurus* Thorell, 1876 [its Greater Antillean species have recently been assigned by Esposito et al. (2017) to the genus *Heteroctenus* Pocock, 1893], *Opistacanthus* Peters, 1861, and some *Tityus* species.

## Acknowledgments

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