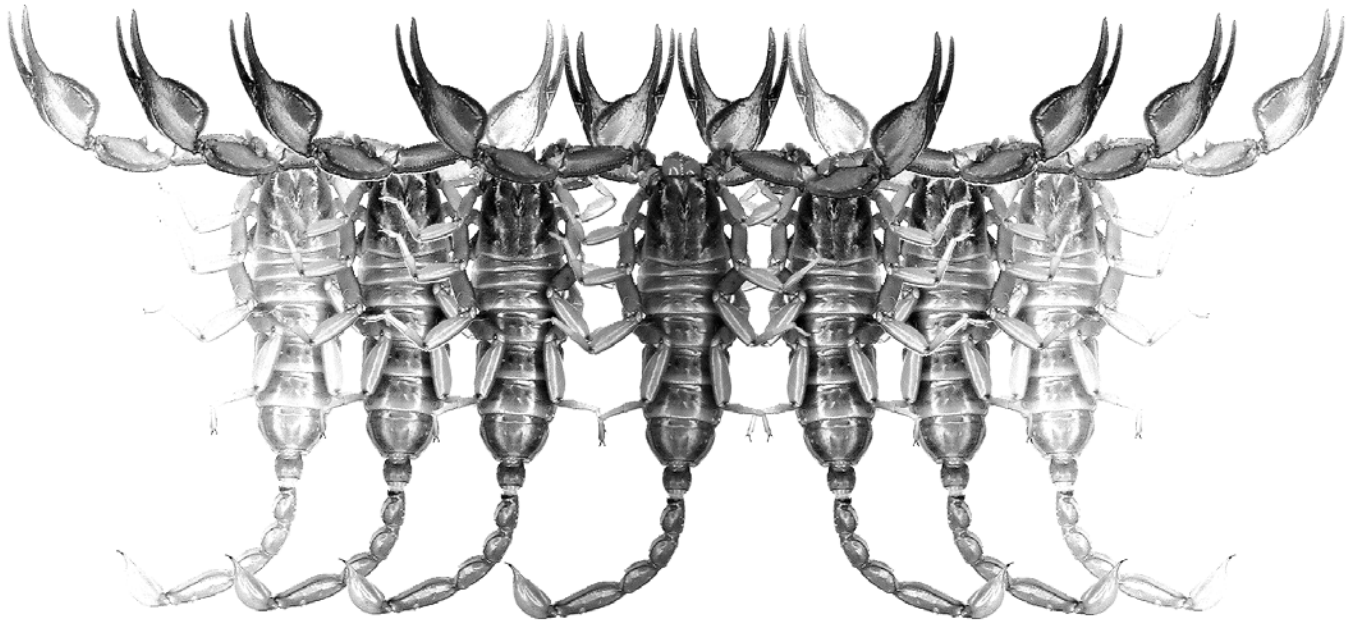


Euscorpius

Occasional Publications in Scorpiology



**Name-Bearing Types of Scorpions Deposited at the
Institute of Ecology and Systematics, Havana, Cuba
(Arachnida: Scorpiones)**

Luis F. de Armas

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Euscorpius

Occasional Publications in Scorpiology

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- **ZISP**, Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia
- **WAM**, Western Australian Museum, Perth, Australia
- **NTNU**, Norwegian University of Science and Technology, Trondheim, Norway

Name-bearing types of scorpions deposited at the Institute of Ecology and Systematics, Havana, Cuba (Arachnida: Scorpiones)

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Summary

In the Institute of Ecology and Systematics, Havana, there are deposited 76 name-bearing types (holotypes, lectotypes, and syntypes) of scorpions belonging to 10 genera of the families Buthidae (*Alayotityus*, *Centruroides*, *Microtityus*, *Rhopalurus*, *Tityopsis*, *Tityus*) and Scorpionidae: Diplocentrinae (*Cazierius*, *Didymocentrus*, *Diplocentrus*, *Heteronebo*). Most of these materials are from the West Indies, mainly the Greater Antilles (Cuba, Hispaniola, Navassa, Jamaica, Puerto Rico), but several are from Mexico. The collection includes species described mostly by P. Franganillo Balboa (1930–1936), A. Moreno Bonilla (1938–1940), and L. F. de Armas and his collaborators (E. J. Marcato Fondeur, E. Martín-Frías, and A. J. Abud Antun) since 1973. *Diplocentrus malinalco* Armas & Martín-Frías, 2003 from Mexico State, is regarded as a **new synonym** of *Diplocentrus coylei* Fritts & Sissom, 1996, previously known only from Guerrero. *Diplocentrus formosus* Armas & Martín-Frías, 2003 is treated as a **new synonym** of *Diplocentrus tehuano* Francke, 1977. Photographs of some little known species are also included.

Resumen

En el Instituto de Ecología y Sistemática, La Habana, están depositados 76 tipos porta-nombre (holotipos, lectotipos y sintipos) de escorpiones que pertenecen a 10 géneros de los Buthidae (*Alayotityus*, *Centruroides*, *Isometrus*, *Microtityus*, *Rhopalurus*, *Tityopsis*, *Tityus*) y Scorpionidae: Diplocentrinae (*Cazierius*, *Didymocentrus*, *Diplocentrus*, *Heteronebo*). La mayor parte de este material procede de las Antillas, principalmente las Antillas Mayores (Cuba, La Española, Navassa y Jamaica), pero algunos son de México. Esta colección incluye especies descritas mayormente por P. Franganillo Balboa (1930–1936), A. Moreno Bonilla (1938–1940) y L. F. de Armas y sus colaboradores (E. J. Marcato Fondeur, E. Martín-Frías, y A. J. Abud Antun) desde 1973. *Diplocentrus malinalco* Armas & Martín-Frías, 2003 del estado de México, es relegada como un **nuevo sinónimo** de *Diplocentrus coylei* Fritts & Sissom, 1996, previamente conocida de Guerrero. *Diplocentrus formosus* Armas & Martín-Frías, 2003 también es tratada como un **nuevo sinónimo** de *Diplocentrus tehuano* Francke, 1977. Se incluyen fotografías de algunas especies poco conocidas.

Introduction

The scorpion collection of the Institute of Ecology and Systematics (formerly Institute of Zoology), Havana, Cuba, contains a rich representation of the faunas of Mexico, Central America, and the Antilles (West Indies). At present, two papers dealing with name-bearing types from this collection have been published (Armas, 1973a, 1984a).

In this collection are deposited most of the name-bearing types of taxa described by Franganillo Balboa (1930–1936), Moreno Bonilla (1938–1940), and the author and his collaborators (Armas, 1973–2001; Armas

& Marcato Fondeur, 1987, 1992; Armas & Martín-Frías, 2002, 2003; Armas & Abud Antun, 2004). It also contains several paratypes, paralectotypes, and highly valuable specimens. According to the International Code of Zoological Nomenclature (ICZN, 1999), the name-bearing types (as well as paratypes and paralectotypes) should be unequivocally identified as such, and kept separately from other specimens in a well-protected place (Fig. 1A–B).

This paper contains an annotated list of most name-bearing types of Caribbean scorpions belonging to the families Buthidae C. L. Koch, 1837 and Scorpionidae Latreille, 1802 (Diplocentrinae Karsch, 1880).

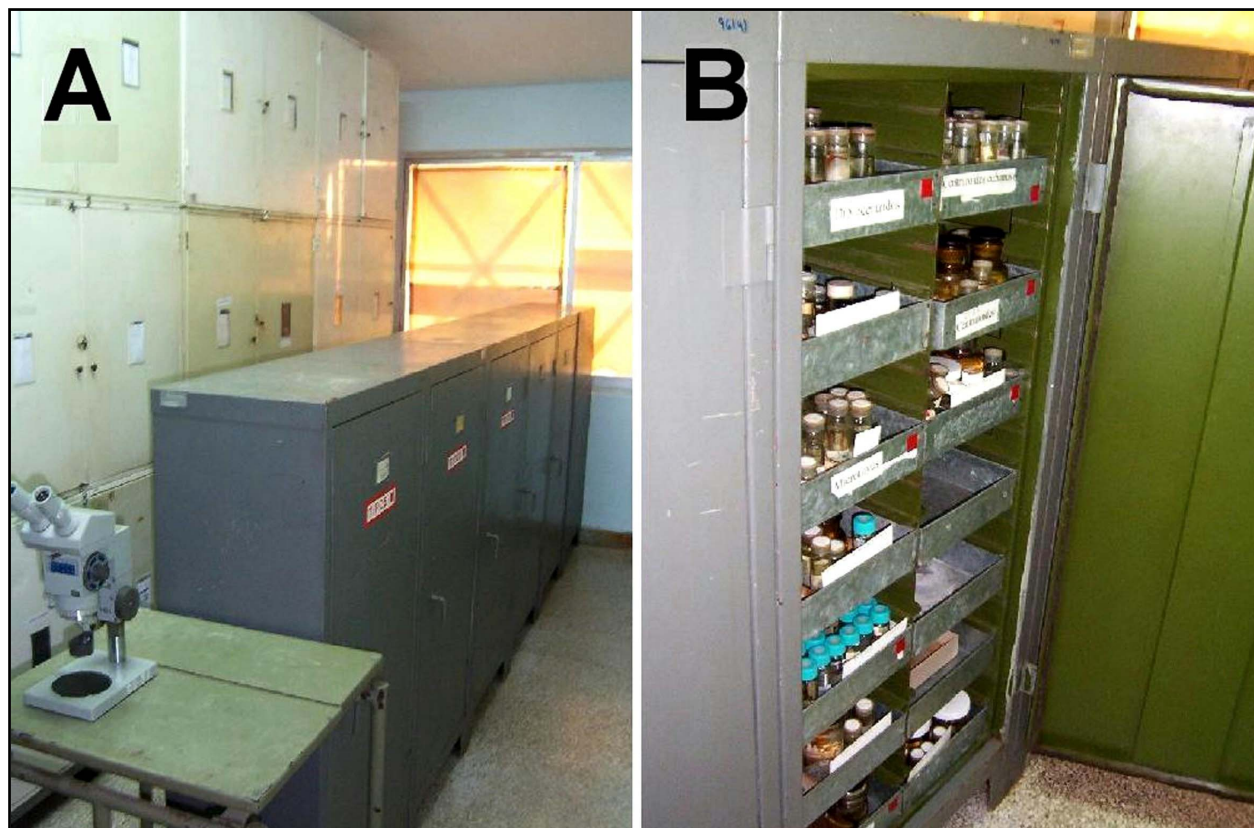


Figure 1: Arachnid collection of the Institute of Ecology and Systematics (IES), Havana. **A**, a partial view; **B**, an open shelf showing name-bearing types of scorpions.

Material and methods

Acronymic of the zoological collection of the Institute of Ecology and Systematics have been cited as CZACC (“Colecciones Zoológicas de la Academia de Ciencias de Cuba”) (Armas, 1984; Armas & Marcato Fondeur, 1987), but also as IES (Armas & Marcato Fondeur, 1992). The old Academy of Sciences of Cuba gives origin to the current Ministry of Science, Technology and Environment (CITMA), whereas the current Academy of Sciences of Cuba is not longer devoted to research work, but acts as a consultant organization of the Cuban State. For this reason, the acronymic used herein for the Institute of Ecology and Systematics is IES, in correspondence with its Spanish one.

Arrangement of taxa is alphabetical. The data of each name-bearing type correspond to those of the labels. Some comments and corrections are added as notes if necessary.

In the IES are also deposited the Cuban arachnid collections of Pelegrín Franganillo Balboa (PF) and Abelardo Moreno Bonilla. The Franganillo collection has the specimens in jars with a number only, but the catalogue has been lost for about half of a century; for

this reason data for the Franganillo taxa are taken for the original description and are given in brackets. The Moreno collection contains only type specimens of scorpions.

Annotated List of Name-Bearing Types

Family Buthidae C. L. Koch, 1837

1. *Alayotityus delacruz* Armas, 1973b:22–23. Immature female holotype (3.307), Salón del Calor, Cueva de los Majáes, Siboney, El Caney, Oriente [now Santiago de Cuba municipality, Santiago de Cuba Province], Cuba, February 1973, J. de la Cruz. **Note:** The holotype was originally identified as a male, but Armas (1984) pointed out that it really is an immature female. Armas (1984) synonymized this species under *A. juraguaensis* Armas, 1973, but Teruel (2001a) revalidated it.

2. *Alayotityus granma* Armas, 1984b:11, 14–19, 20, 31, 34, figs. 3A–E, 4G–H, 5, 7. Female holotype (3.2164), 2 km N of Cabo Cruz, Niquero, Granma Province, Cuba, 16 October 1981, L. F. Armas, L. R. Hernández & J. Pérez, under stone.

3. *Alayotityus juraguaensis* Armas, 1973b:10, 14–17, 18, 21, 26, 27–28, figs. 7–93. Female holotype (3.304), Playa de Juraguá, El Caney, Oriente [now Santiago de Cuba municipality, Santiago de Cuba Province], Cuba, 4 November 1971, L. F. Armas, under stones, on the coast.
4. *Alayotityus nanus* Armas, 1973b:4–10, 11, 12, 13, 18, 21, 24–25, 26, figs. 1–6. Female holotype (3.284), Puerto Boniato, Santiago de Cuba, Oriente [now Santiago de Cuba Province], Cuba, 6 November 1971, L. F. Armas, under stone, 450 m.
5. *Alayotityus sierramaestrae* Armas, 1973b:19–21. Female holotype (3.320), mountains near Uvero, El Cobre, Oriente [now Guamá municipality, Santiago de Cuba Province], Cuba, 25 May 1972, L. F. Armas, under stone.
6. *Centruroides alayoni* Armas, 1999:122–124, 135, figs. 10A–C, Pl. I G. Female holotype (3.2902), Playa del Coco, NW Isla Beata, Pedernales Province, República Dominicana, 19 March 1999, L. F. Armas & K. Polanco (U. V. light, dry subcoastal forest) (Fig. 2 A–D).
7. *Centruroides anchorellus* Armas, 1976a:2–12, 42, figs. 1A–B, 2 c. Female holotype (3.421), Cayo Ancilita, Jardines de la Reina, Camagüey, Cuba, 25 March 1971, L. F. Armas & W. Oliva, under bark. **Note:** Armas (1984) erroneously cited the catalog number as 3.320.
8. *Centruroides arctimanus* Armas, 1976a:12–15, figs. 3, 4B. Male holotype (3.358), Cayo Francés, N of Caibarién, Las Villas [now Villa Clara Province], Cuba, January 1971, Luis V. Moreno & Félix de la Cruz.
9. *Centruroides arctimanus banensis* Armas, 1976a:16, table 3. Female holotype (3.392), Punta de Mulas, Banes, Oriente [now Holguín Province], 9 August 1945, Aguayo. **Note:** This taxon was regarded as a dubious subspecies by Armas (1984b).
10. *Centruroides armadai* Armas, 1976a:16–20, 45. Female holotype (3.366), Cayo Conuco, Caibarién, Las Villas [now Villa Clara Province], 28 February 1974, L. F. Armas & Fernando Ruiz. **Note:** it was regarded by Armas (1984b) as a junior synonym of *C. anchorellus*.
11. *Centruroides bani* Armas & Marciano Fondeur, 1987:5–12, figs. 1–2, tables 3–7. Female holotype (3.2916), Sabana Buey, Bani, [Peravia Province], Dominican Republic, 20 May 1986, Consuelo, Abud & Marciano, in dry tree trunk.
12. *Centruroides baracoae* Armas, 1976a:20–23, 46–47. Male holotype (3.486), Monte Iberia, Nibujón, Baracoa, Oriente [now Guantánamo Province], Cuba, 4 March 1972, J. de la Cruz & L. F. Armas, under bark. **Note:** This species was synonymized under *C. anchorellus* by Armas (1984b), but Teruel (2000a) revalidated it.
13. *Centruroides cajennensis* Armas, 1976a:23–26, 48. Female holotype (3.493), Cayo Rapado, Dimas, Pinar del Río, Cuba, 1 December 1949, Jaime & Valle. **Note:** This species was synonymized under *C. guanensis* Franganillo, 1930 by Armas (1984b).
14. *Centruroides elegans guanensis* Franganillo, 1930b:119. Female lectotype (PF-752), designated by Armas (1973a), Guane, Cuba, no date, no collector. **Note:** This taxon was elevated to species level by Jaime (1954:1088). The original jar containing this specimen contains a handwritten label that says “Guane”.
15. *Centruroides gracilis johannis* Moreno, 1939a:70, pl. 7, fig. 3. Male holotype (3.891), Viana, Calabazar de Sagua, Las Villas [now Villa Clara Province], Cuba, 22 December 1935, A. Moreno. **Note:** This taxon was regarded as a dubious subspecies by Armas (1976a).
16. *Centruroides gracilis pectinatissimus* Moreno, 1939a:69, 70 pl. 7, fig. 4. Male holotype (3.890), Caibarién, Las Villas [now Villa Clara Province], Cuba, 10 April 1938, A. Alonso. **Note:** This taxon was regarded as a dubious subspecies by Armas (1976a).
17. *Centruroides guanensis sanfelipensis* Armas, 1976. Female holotype (3.603), Cayo Juan García, Cayos de San Felipe, Pinar del Río Province, Cuba, 1 March 1970, L. F. Armas, in dead branch of tree. **Note:** During collecting, the holotype lost the right pedipalp. Armas (1981b) regarded this taxon as a dubious subspecies.
18. *Centruroides jaragua* Armas, 1999:124–126, fig. 11A–B. Male holotype (3.2917), 400 m S of Destacamento de la Marina (Punta Beata beach), N of Beata Island, Pedernales Province, Dominican Republic, 19 March 1999, L. F. Armas and K. Polanco (in epiphytic Bromeliaceae; last molt: 28 June 1999) (Fig. 3 A–D).
19. *Centruroides luceorum* Armas, 1999:119–122, 131, figs. 9A–C, tabla 1. Female holotype (3.2870), Navassa Island, March 1999, G. Alayón, under stone (Fig. 4 A–D).
20. *Centruroides maisiensis* Armas, 1976a:30–33, 50. Male holotype (3.494), Punta de Maisí, Baracoa, Oriente [now Maisí municipality, Guantánamo Province], Cuba, 6 October 1973, L. F. Armas, inside a dead branch of tree. **Note:** This species was synonymized under *C. anchorellus* by Armas (1984b), but Teruel (2000a) considered it as a junior synonym of *C. baracoae*.
21. *Centruroides marcanoi* Armas, 1981:10–12, table 5. Female holotype (3.2884), Río Mulito, Banano, Pedernales province, Dominican Republic, 22 March 1980, E. de Js. Marciano F.
22. *Centruroides margaritatus morenoi* Mello-Leitão, 1945:261. Three females, syntypes (3.2887), Trinidad, Santa Clara [now Sancti Spiritus Province, Cuba], 10 November [19]37, J. Morte. **Note:** Moreno

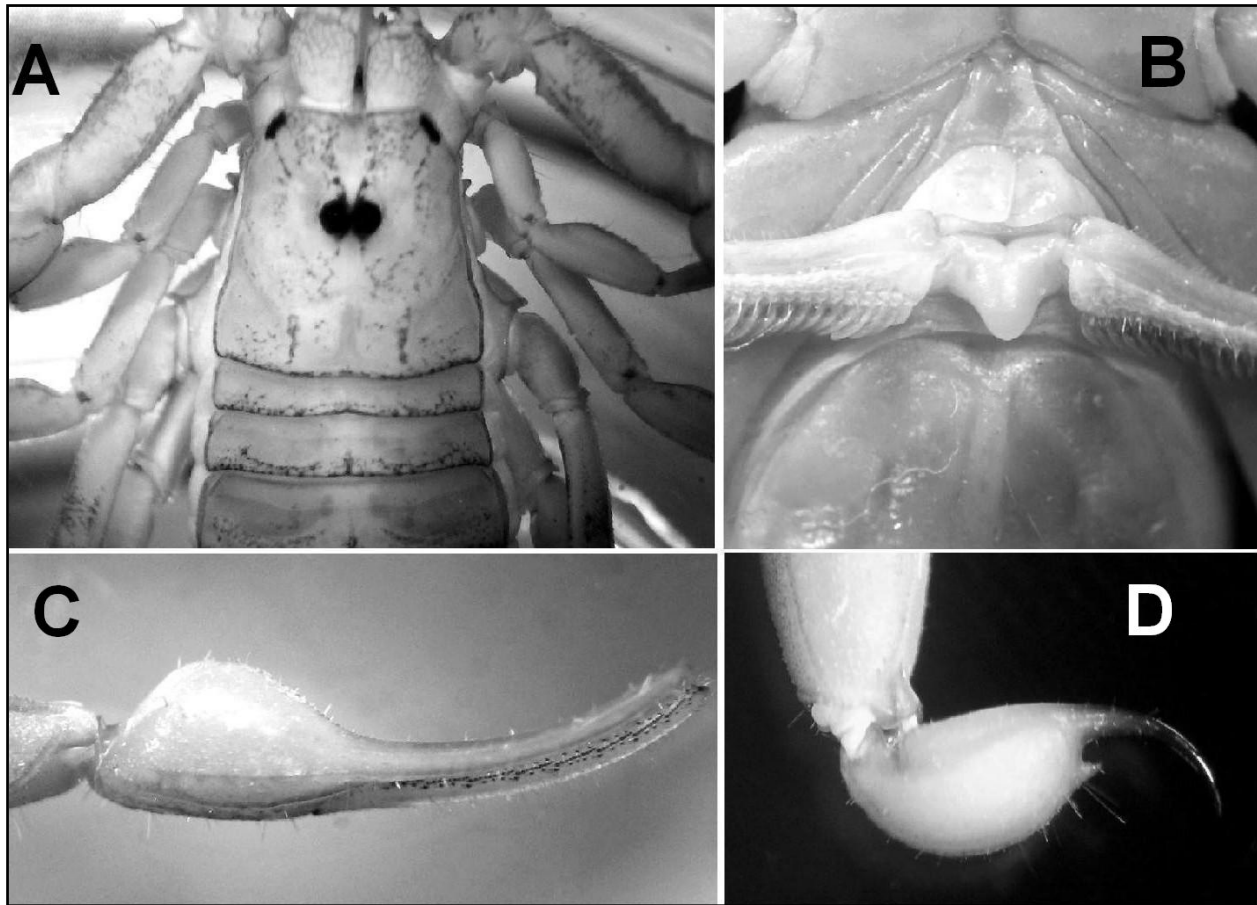


Figure 2: *Centruroides alayoni*. Female holotype. **A**, carapace and first tergites; **B**, sternum, genital operculum, and basal plate of pectines; **C**, pedipalpal right chela, dorsal aspect; **D**, telson, lateral aspect.

(1939) stated that he examined more than eight specimens, but currently the only available specimens are those three syntypes, all of which have the metasoma and appendages detached. There is an additional lot containing three immature specimens collected on 15 September 1937 in the same locality and by the same collector, but they were not mentioned by Moreno (1939a, 1940b). This subspecies was elevated to species level by Armas & Maes (2000).

23. *Centruroides nitidus taino* Armas & Marcato Fondeur, 1987. Male holotype (3.2942), La Nevera, Valle Nuevo, Constanza, [La Vega Province, Dominican Republic], 27 April 1986, Marcato, fallen log. **Note:** This taxon was considered by Armas (2002) as a dubious subspecies.

24. *Centruroides robertoi* Armas, 1976a:33–38, 51, figs. 5B, 6. Male holotype (3.496), Aeropuerto de Maisí, Baracoa, Oriente [now Maisí municipality, Guantánamo Province], Cuba, 6 May 1972, Luis R. Hernández, under bark of tree.

25. *Centruroides sissomi* Armas, 1996:25–29, figs. 1–4. Female holotype (3.2907), Rancho Campo, Majahual, O[ttón]. P. Blanco, Q[uintana] Roo, Mexico,

21 August 1993, M. Tuz, on the road, at night, with 14 offspring. **Note:** The holotype is the only adult specimen known for this species (Fig. 5 A–D)

26. *Centruroides stockwelli* Teruel, 2001b:102–103, 104, 105, 106, figs. 20–28, tab. IV, V–VI. Male holotype (3.813), Topes de Collantes, Trinidad, L[as]. V[illas]. (now Sancti Spíritus Province), Cuba, August 1976, L. B. Zayas. **Note:** The specimen has a label that says “*Centruroides guanensis cubensis* Moreno, det. L. F. Armas, 1978, L-98”.

27. *Centruroides thorelli aguayoi* Moreno, 1939:74. Female lectotype (3.884), designated by Armas (1984a), Tiguabos farm, Cauto del Paso, Victoria de las Tunas, Oriente [now Granma Province], 9 August 1936, F. M. Cepero. **Note:** This subspecies was synonymized under *C. guanensis* Franganillo by Armas (1984b). Armas (1973a:6) incorrectly treated this specimen as the holotype.

28. *Centruroides thorelli cubensis* Moreno, 1940b:101–103, láms. 30–32. Female lectotype (3.886) designated by Armas (1984a), La Jata farm, Guanabacoa, Habana [now Ciudad de La Habana Province], Cuba, 18 April 1939, M. Roca. **Note.** It was

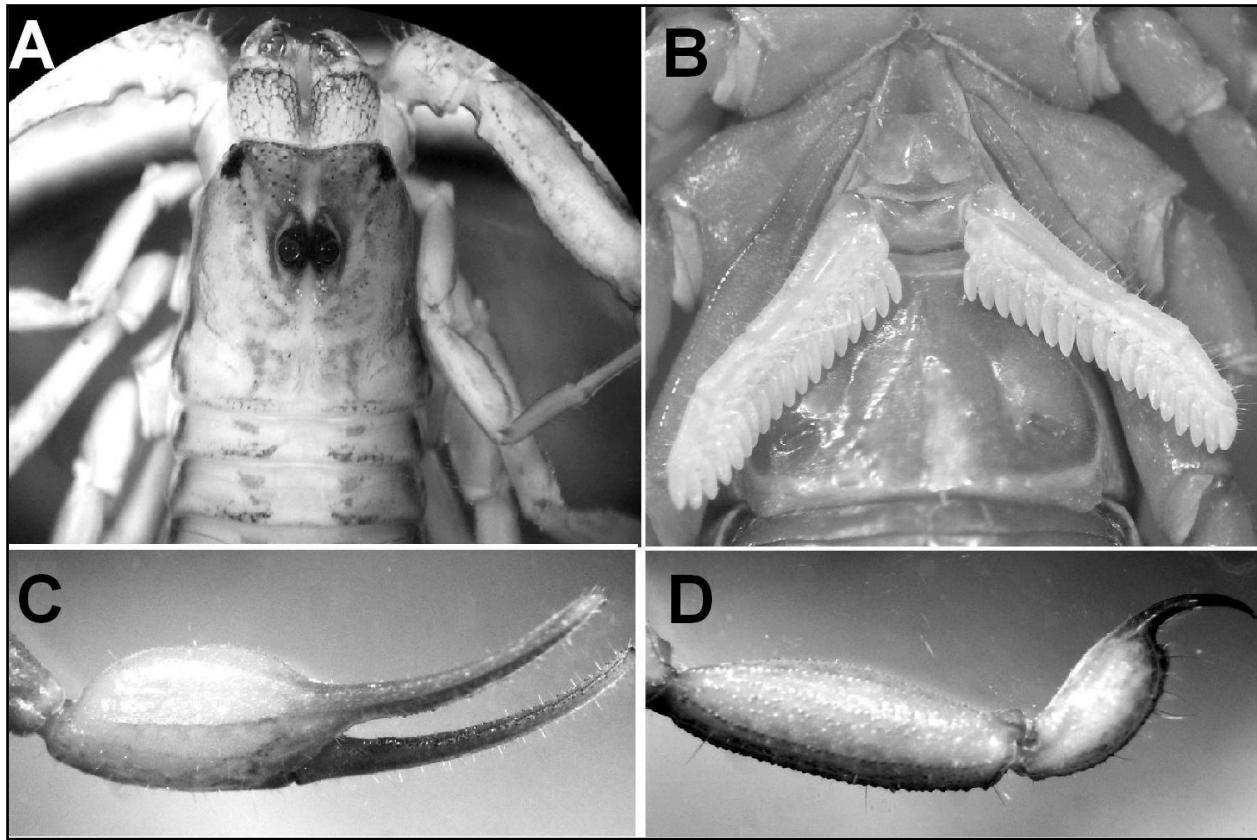


Figure 3: *Centruroides jaragua*. Male holotype. **A**, Carapace and first tergites; **B**, sternum, genital operculum and pectines; **C**, right pedipalpal chela, dorsal aspect; **D**, metasomal segment V and telson, lateral aspect.

synonymized under *C. guanensis* by Armas (1981b). Armas (1973a:6) incorrectly treated this specimen as the holotype.

29. *Centruroides underwoodi* Armas, 1976a:54–55. Female holotype (3.3143), 2 km S of Long Bay, Portland, Jamaica, 25 December 1951, G. Underwood, coconut tree on beach (Fig. 6A–D).

30. *Centruroides zayasi* Armas, 1976:39. Female holotype (3.1685), rocks in front of Cayo La Vache [Île à Vache], Les Cayes, Haiti, July 1950, F. de Zayas (Fig. 7A–D). **Note:** This species was treated as a junior synonym of *C. nitidus* (Thorell, 1976) by Armas (1988), but according to Armas (2001) it could be either a junior synonym of *C. tenuis* (Thorell, 1876) or a valid species. The holotype (only known specimen) had never been illustrated.

31. *Isometrus europeus quinquefasciatus* Franganillo, 1931:118. Male lectotype designated by Armas (1973a), [Baracoa, Oriente (now Guantánamo Province), Cuba, no date, no collector]. **Note:** This subspecies was synonymized under *Isometrus maculatus* (De Geer, 1778) by Moreno (1939a).

32. *Microtityus consuelo* Armas & Marcano Fondeur, 1987:16–19, fig. 3, lám. I, tabla 9. Female holotype (3.2943), Cumayasa, San Pedro de Macoris,

Dominican Republic, 19 April 1986, Consuelo de Marciano, Abud, and E. Marciano, under stone.

33. *Microtityus fundorai* Armas, 1974a:19–23, 24. Female holotype (3.348), charrascales de El Pilón, Mayarí, Oriente [now Guantánamo Province], Cuba, 1 May 1974, L. F. Armas, under stone.

34. *Microtityus guantanamo* Armas, 1984b:27–32, 33, 34, 35, figs. 6A–H, 7, 8. Female holotype (3.2400), Loma de la Gobernadora (= Loma de la Herradura), Sierra del Maquey, Manuel Tames, Guantánamo Province, Cuba, 16 August 1975, L. F. Armas & L. B. Zayas, under stone.

35. *Microtityus iviei* Armas, 1999:104–104, 134, 135, fig. 2A–B, lám. I A. Male holotype (3.2929), 24 km N of Cabo Rojo, Pedernales Province, Dominican Republic, 20 August–9 September 1988, M. A. Ivie, T. K. Philips & K. A. Johnson (365 m, flight interception trap).

36. *Microtityus jaumei* Armas, 1974a:3–10, 11, 14, 16, 19, 20, 21, 24, figs. 1A–C, 2, 3. Female holotype (3.323), near El Morro, Santiago de Cuba, Oriente [now Santiago de Cuba Province], Cuba, 22 May 1972, L. F. Armas, under stone.

37. *Microtityus lantiguai* Armas & Marcano Fondeur, 1992:7–10, 16, figs. 4, 5, tabla 3. Subadult

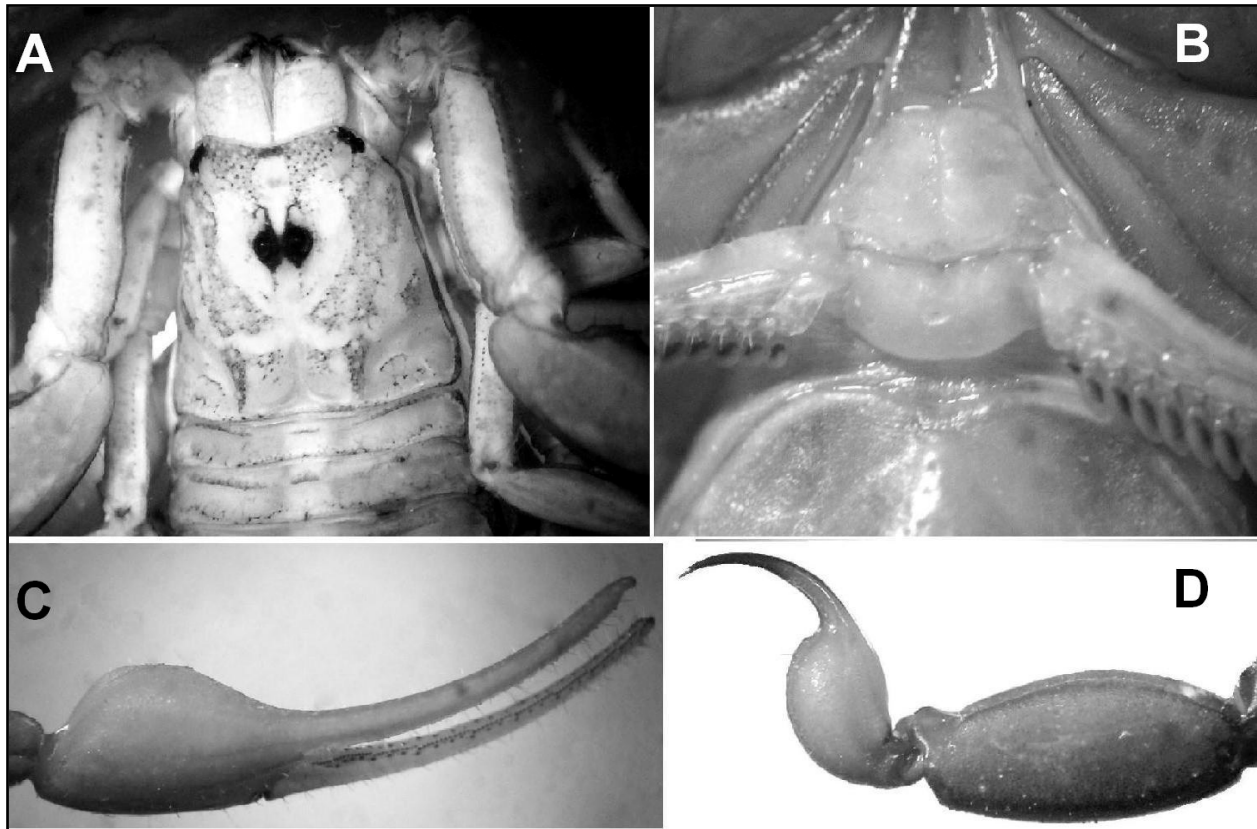


Figure 4: *Centruroides luceorum*. Female holotype. **A**, Carapace and first tergites; **B**, sternum, genital operculum, and basal plate of pectines; **C**, pedipalpal right chelae, dorsal aspect; **D**, metasomal segment V and telson, lateral aspect.

female holotype (3.2885), 8 km N of Pedernales, Pedernales Province, Dominican Republic, 22 August 1987, E. J. Marciano, A. Abud, L. F. Armas & D. Lantigua, under stone. **Note:** According to Armas (2002) the holotype is a subadult specimen.

38. *Microtityus paucidentatus* Armas & Marciano Fondeur, 1992:11–16, figs. 4, 6, 7, tablas 4, 5. Female holotype (3.2815), Segundo Paso, sección Apolinar Perdomo, Neiba, Baoruco Province, Dominican Republic, 3 October 1987, Armas, Abud & P. Rivera, under stone.

39. *Microtityus trinitensis* Armas, 1974a:11–19, 20, 21, 24, figs. 4A, 5A, 6A, 7. Female holotype (3.337), road to Topes de Collantes km 2, Trinidad, Las Villas [now Sancti Spiritus province], Cuba. 17 December 1973, L. F. Armas and L. R. Hernández, under stone.

40. *Microtityus virginiae* Armas, 1999:102–104, fig. 1A–B. Female holotype (3.2920), Los Bolos (1100 m), Sierra de Neiba, Postrer Río, Independencia Province, Dominican Republic, 14 April 1987, L. F. Armas, under stone, secondary forest with coffee plantation.

41. *Rhopalurus abudi* Armas & Marciano Fondeur, 1987:19–20, fig. 4, lám. 2, tabla 10. Female holotype (3.2912), Catuano, Saona Island [La Romana Province],

Dominican Republic, 27 January 1980, E. de Js. Marciano F.

42. *Rhopalurus bonetti* Armas, 1999:126–129, 135, fig. 12A–B, lám. I H. Male holotype (3.2908) Playa del Coco, NW Beata Island, Pedernales Province, Dominican Republic, 19 March 1999, L. F. Armas, K. Polanco (U.V. light, in the soil). **Note:** As this species has been poorly illustrated, some photos of the holotype are herein included (Fig. 8 A–D).

43. *Rhopalurus garridoi* Armas, 1974c:2–5, 6, 7, figs. 1B, 2B, 3B, 4. Female holotype (3.616), Baitiquirí, Guantánamo, Oriente [now Guantánamo Province], Cuba, December 1971, O. H. Garrido, under stone.

44. *Rhopalurus junceus cadenasi* Moreno, 1939a:66–67, lám. 6, fig. 3; 1939b:128–129, pl. XXII. Preadult female holotype (3.892), Loma de la Universidad, La Habana [now Plaza de la Revolución municipality, Ciudad de La Habana Province], Cuba, 12 May 1937, A. Moreno. **Note:** This taxon was considered a dubious subspecies by Armas (1973a). Holotype is in bad condition, with detached metasoma, legs, and pedipalps.

45. *Tityus abudi* Armas, 1999:105–108, 109, 135, fig. 3A–D, lám. IB–C. Male holotype (3.2910), Loma Alto de la Bandera (1610 m, 19°07'04" N, 70°50'16.8"

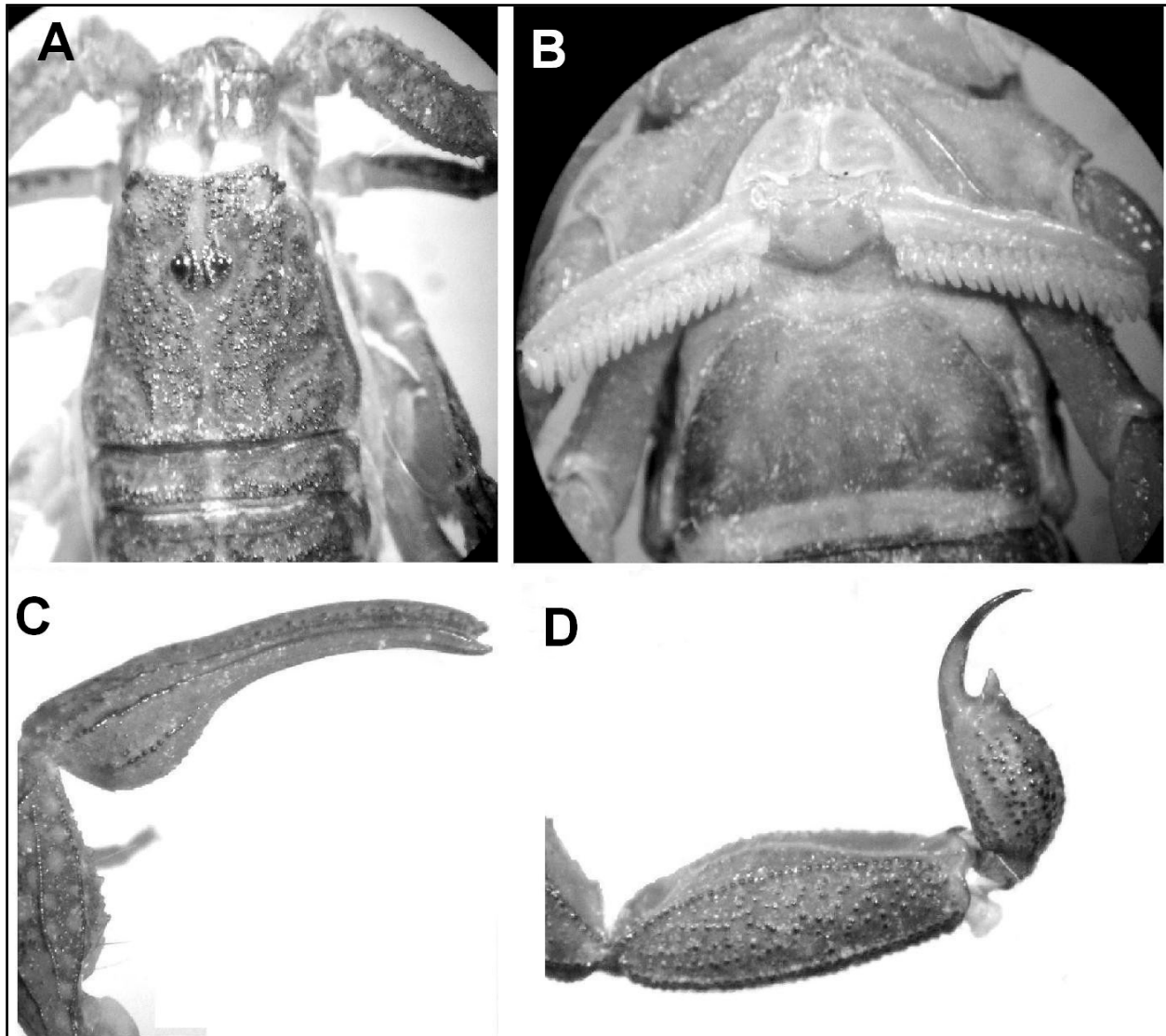


Figure 5: *Centruroides sissomi*. Female holotype. **A**, carapace; **B**, sternum, genital operculum, and pectines; **C**, left pedipalp chela, dorsal aspect; **D**, metasomal segment V and telson, lateral aspect.

W), NW Parque Nacional “Armando Bermudez”, sección Juncalito, Jánico, Santiago Province, Dominican Republic, 11 March 1987, L. F. Armas (UV light, on trunk of tree, cloudy wood).

46. *Tityus altithronus* Armas, 1999:115–118, fig. 7A–D. Female holotype (3-2919), Pico Duarte, over 3000 m a.s.l., [San Juan Province, Dominican Republic], 5 January 1985, J. Cordero, J. Marchena & D. Lantigua.

47. *Tityus anasilviae* Armas & Abud Antun, 2004: 54, 55, 56, fig. 1 A–B, 2 A, 3, 9 F, table I. Male holotype (3.3145), Arroyón, Blanco, Bonao, Monseñor Nouel Province, Dominican Republic, 8 September 2002, A. Abud & Ana Silvia Reinoso, 700 m a.s.l., in a house, in a pillowcase.

48. *Tityus ebanoverde* Armas, 1999:118–119, 135, fig. 8A–C. Male holotype (3. 2869), Ecological Station “Ébano Verde”, El Arroyazo, Constanza, La Vega Province, Dominican Republic, 27 March 1999, R. Escalante & L. F. Armas (inside a house, under a bag, 1100 m). **Note:** As holotype is the only known specimen for this species, which was poorly illustrated, some photos are included herein (Fig. 9 A–D).

49. *Tityus elii* Armas & Marciano Fondeur, 1992:22–27, figs. 4, 10, 11, tab. 9–11. Female holotype (3.2915), Loma La Sal, Jarabacoa, La Vega Province, Dominican Republic, 5 August 1988, Eli Rafael Martínez. **Note:** Lourenço (1999) selected this taxon as the type species of the genus *Caribetityus* Lourenço, 1999, but Armas & Abud Antun (2004) regarded that

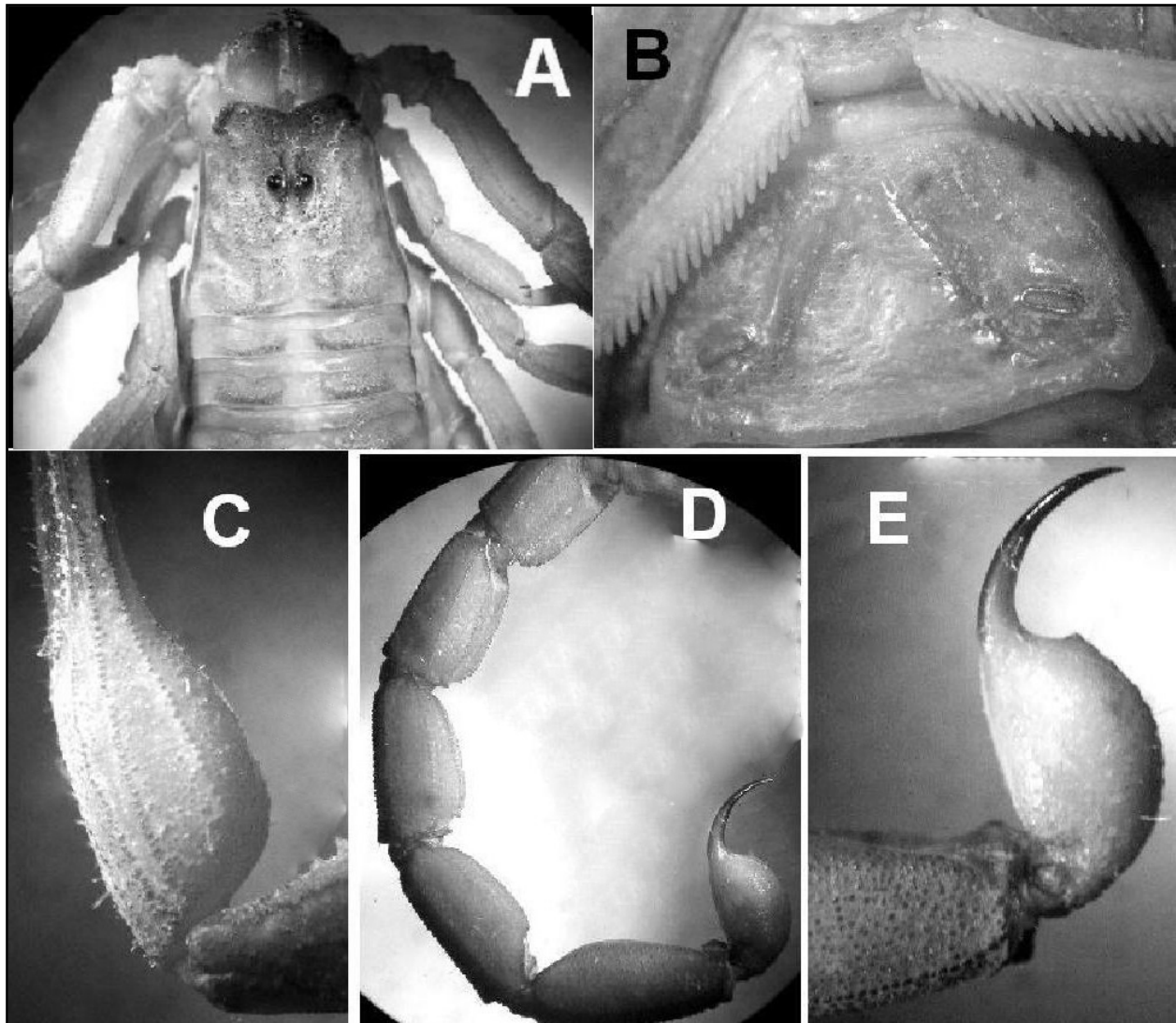


Figure 6: *Centruroides underwoodi*. Female holotype. **A**, Trunk (carapace, tergites I-IV, and pedipalpal femur); **B**, pectines and sternite III; **C**, pedipalpal chela, dorsal aspect; **D**, metasoma, dorsolateral aspect; **E**, telson, lateral aspect.

genus as a junior synonym of *Tityus* C. L. Koch, 1836, and considered it only as a species group.

50. *Tityus inexpectatus* Moreno, 1940a:162–164, pls. 22, 23, figs. 2–5. Female lectotype (3.883) designated by Armas (1984b), Playa de Baracoa, road to Playa El Salado, Habana, Cuba, 11 April 1938, A. Moreno. **Note:** This species was transferred to the genus *Tityopsis* Armas, 1974 by Armas (1984a). This name-bearing specimen was erroneously treated as the holotype by Armas (1973a).

51. *Tityus inexpectatus inaequalis* Armas, 1974a:6–7, figs. 1B, 4, tabla 2. Female holotype (3.262), Valle Dos Hermanas, Viñales, Pinar del Río Province, Cuba, 9 January 1972, J. de la Cruz, under stone. **Note:** This subspecies was transferred to the genus *Tityopsis* by Armas (1984b). Lourenço & Vachon (1996) raised it to specific level.

52. *Tityus michelii* Armas, 1982:2–7, figs. 1 A–D, tabla 1. Male holotype (3.1688), Guanica, Puerto Rico, April 1979, J. Micheli, under bark of a tree. **Note:** The holotype is a recently molted specimen.

53. *Tityus neibae* Armas, 1999:110–112, fig. 5A–C. Male holotype (3.2903), Los Bolos (1100 m), Sierra de Neiba, Postrer Río, Independencia Province, Dominican Republic, 14 April 1999, L. F. Armas. The male was found in the petiole of an almost detached palm leaf, at 1.5 m above the ground, in a secondary forest with coffee plantation.

54. *Tityus ottenwalderi* Armas, 1999:108–110, 135, fig. 4A–C, lám. ID–E. Male holotype (3.2889), Loma Alto de la Bandera (1597 m a.s.l., 19°07'45.1" N, 70°50'27.9" W), NE Parque Nacional "Armando Bermudez, Jánico, Santiago Province, Dominican Re-

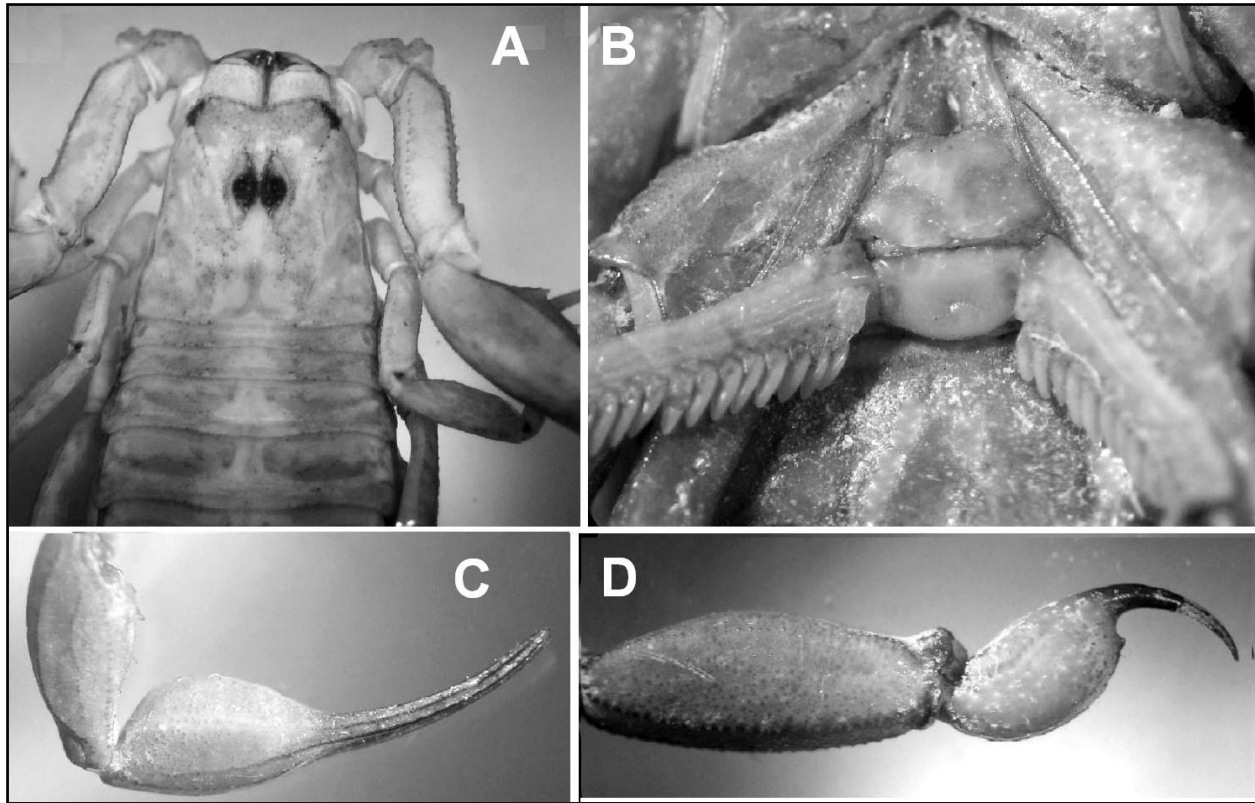


Figure 7: *Centruroides zayasi*. Female holotype. **A**, Carapace and first tergites; **B**, sternum, genital operculum, and basal plate of pectines; **C**, right pedipalpal patella and chela, dorsal aspect; **D**, metasomal segment V and telson, lateral aspect.

public, 12 March 1999, L. F. Armas and R. Ramírez, under bark of *Cirila racemiflora*, cloudy wood.

55. *Tityus portoplatensis* Armas & Marciano Fondeur, 1992:30–33, fig. 4, 12, tabla 12. Female holotype (3.2914), Pico Isabel de Torres, Puerto Plata, Dominican Republic, no date, Santiago Delgado. **Note:** The holotype was probably collected between 1988 and 1991.

56. *Tityus quisqueyanus* Armas, 1982:13–18, figs. 3A–B, tabla 4. Female holotype (3.1700), Valle Nuevo, Constanza [La Vega Province], Dominican Republic, 17 August 1980, E. de J. Marciano F. **Note:** Lourenço (1999) transferred this species to the genus *Caribetityus* Lourenço 1999, but Armas & Abud Antun (2004) treated that genus only as a species group.

57. *Tityus septentrionalis* Armas & Abud Antun, 2004:56, 57, 58–59, figs. 3, 4A–C, 5B, 9B, table II, III. Female holotype (3.3144), Loma Quita Espuela [Duarte Province], Dominican Republic, 11 February 2002, E. Gutiérrez, “alacrán alimentándose de ciempiés” (“scorpion feeding on a centipede”), in forest litter, Field No. E.G.11.

Family Scorpionidae Latreille, 1802 (subfamily Diplocentrinae Karsch, 1880)

58. *Cazierius alayoni* Armas, 1999:128, 129–131, figs. 13A–C, tabla 2. Female holotype (3.2872), Navassa Island (19° 25' N, 75° 01' W), April 1999, G. Alayón, under stone. **Note:** According to Armas (1999:131) the holotype and remainder specimens were collected in coastal (subxeric) forest.

59. *Cazierius garrido* Armas, 2005:70–71, figs. 1–7, 8; table I. Female holotype (3.3146), Cerro de Puntas (1330 m, 18° 10' 26" N, 66° 35' 38" W), Cordillera Central, Puerto Rico, September 2000, O. H. Garrido, A. Silva & A. Pérez Asso, under stone.

60. *Cazierius gundlachii parvus* Armas, 1984b:2–5, 34, fig. 1A. Male holotype (3.2172), 2 km N of Cabo Cruz, Niquero, Granma Province, Cuba, 16 October 1981, L. F. Armas, Luis R. Hernández & J. Pérez, under stone. Cuba. **Note:** This subspecies was raised to specific level by Teruel (2000b).

61. *Cazierius monticola* Armas, 1999:131–133, 134, fig. 14A–C. Female holotype (3.2906), ca. 35 km N of Cabo Rojo, El Aceitillar (4500 ft), Pedernales Province, Dominican Republic, 20 August–9 September 1988, M. A. Ivie, K. A. Johnson & T. K. Philips (open

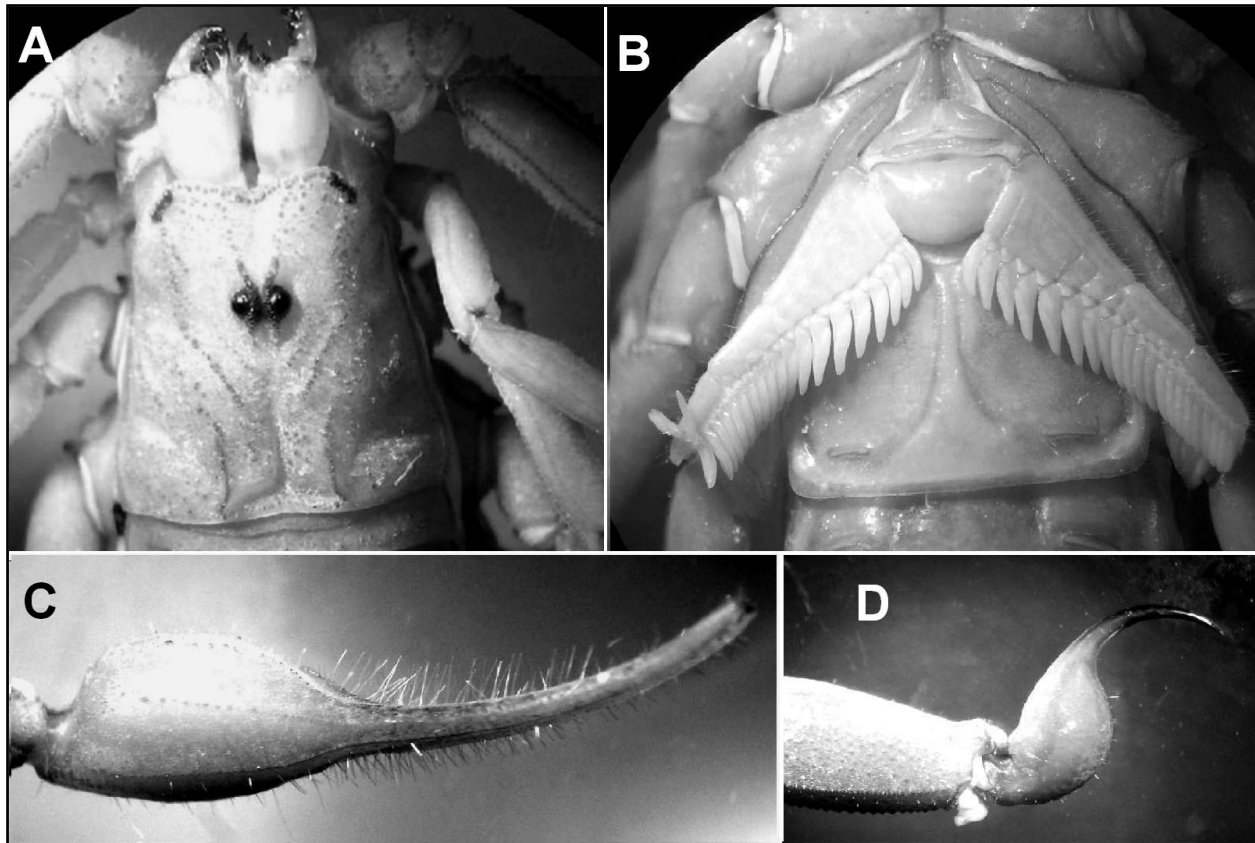


Figure 8: *Rhopalurus bonetti*. Male holotype. **A**, Carapace and first tergites; **B**, sternum, genital operculum, and pectines; **C**, right pedipalpal chela, dorsal aspect; **D**, metasomal segment V (posterior half) and telson, lateral aspect.

pine forest, flight interception trap). **Note:** Teruel (2005) transferred this species to *Heteronebo*.

62. *Cazierius oviedo* Armas, 1999:133–134, fig. 15A–C. Female holotype (3.2911), sección Los Tres Charcos (road Oviedo–Pedernales), Oviedo, Pedernales Province, Dominican Republic, 21 August 1987, Abud, Marcano & Armas, Lantigua (under stone, dry wood). **Note:** Teruel (2005) transferred this species to *Heteronebo*.

63. *Didymocentrus jaumei* Armas, 1976b:11–16, 30, 33, figs. 4, 9C. Female holotype (3.168), Cayo Conuco, Caibarién, Las Villas [now Villa Clara Province], Cuba, 28 February 1974, L. F. Armas, under stone. **Note:** This species was synonymized under *Didymocentrus trinitarius* (Franganillo) by Francke (1978).

64. *Didymocentrus morenoi* Armas, 1973a:4. Female holotype (3.203), Lomas de Trinidad, Las Villas [now Sancti Spiritus Province], Cuba, 15 September 1937, J. Morte. **Note:** The holotype has the body separated at the level of the last mesosomal segment; the right pedipalp chela is also detached. Francke (1978) transferred this species to the genus *Heteronebo* Pocock, 1899 and regarded it as a subspecies of *H. bermudezi* (Moreno, 1938).

65. *Didymocentrus sanfelipensis* Armas, 1976. Female holotype (3.169), Sabanas de San Felipe, Arroyo Blanco, Las Villas [now Sancti Spiritus Province], Cuba, 30 March 1972, L. F. Armas, under stone. **Notes.** This species was synonymized under *Didymocentrus trinitarius* (Franganillo) by Francke (1978). Sabanas de San Felipe corresponds to a “cuabal” (xeromorphic vegetation) localized between the provinces of Sancti Spiritus and Ciego de Ávila.

66. *Diplocentrus bermudezi* Moreno, 1938:195–197, 200, 201, pl. 16, figs. 9–12, pl. 17, fig. 1. Female holotype (3.881), Ensenada de Corrientes, Pinar del Río Province, Cuba, 8 May 1938, P. J. Bermúdez (Atlantis Excursión). **Note:** This taxon was transferred to the genus *Heteronebo* by Francke (1978).

67. *Diplocentrus formosus* Armas & Martín-Frías, 2003: 72–74, figs. 1–7, tabs. I–II. Male holotype (3.2991), [colonia] E[miliano], Zapata, 5 km WSW Tehuantepec, Oaxaca, Mexico, 11 June 2002, Héctor Cabrera. **Note:** This species represents a **new synonym** of *Diplocentrus tehuano* Francke, 1977.

68. *Diplocentrus malinalco* Armas & Martín-Frías, 2003: Male holotype (3.2987), Malinalco, Estado de México, Mexico, November 1959, De la Vega. Determined as *Diplocentrus keyserlingii* Karsch, 1880

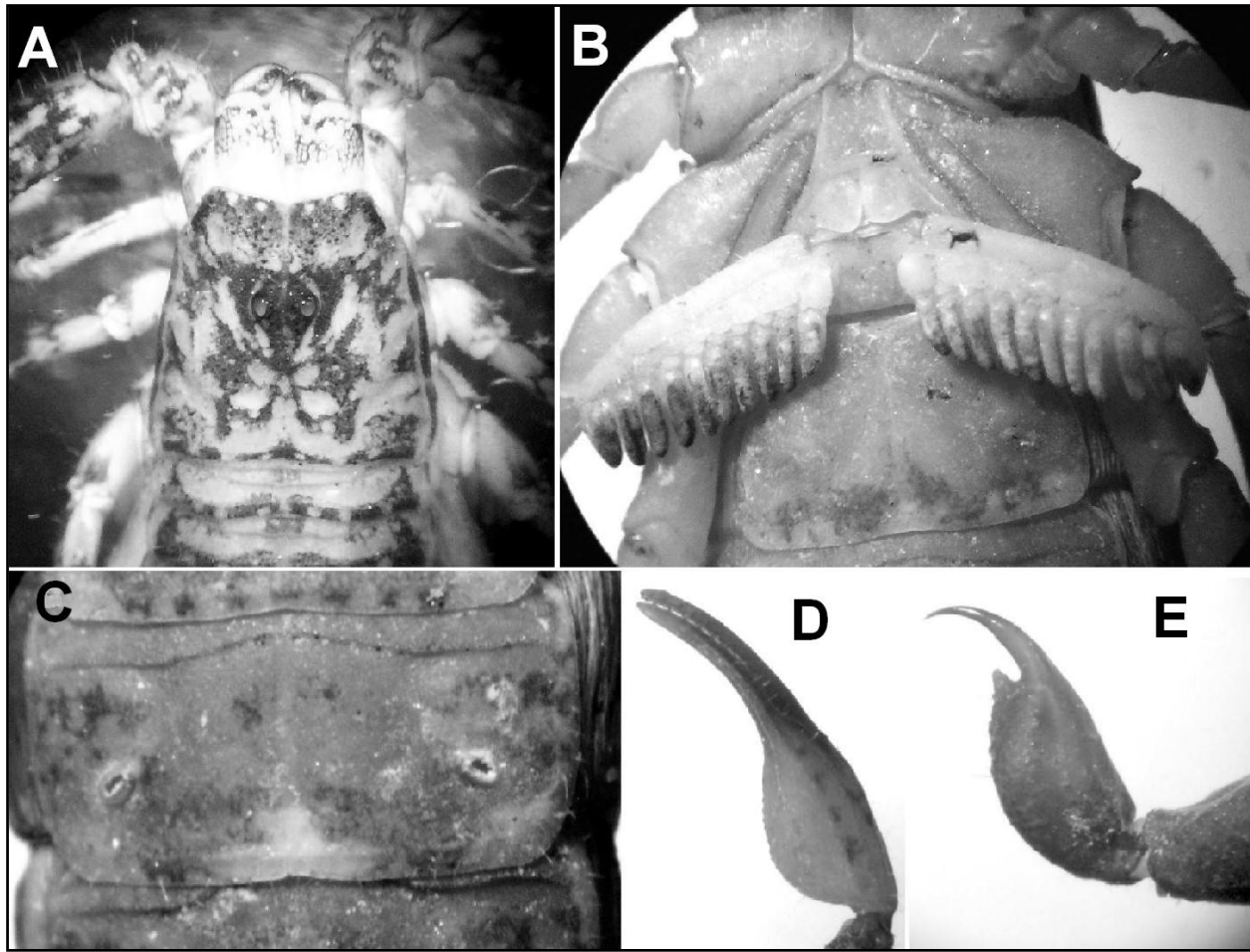


Figure 9: *Tityus ebanoverde*. Male holotype. **A**, carapace and first tergites; **B**, sternum, genital operculum, and pectines; **C**, sternite V; **D**, right pedipalpal chela, dorsal aspect; **E**, telson, lateral aspect.

(presumably by M. L. Jaume), and as *Diplocentrus tehuacanus* Hoffmann, 1931 by Armas (1996). **Note:** This species represents a **new synonym** of *Diplocentrus coylei* Fritts & Sissom, 1996 from Guerrero. This is the first record of this species for Mexico State.

69. *Diplocentrus orientalis* Franganillo, 1935:20. Female lectotype (PF-757) designated by Armas (1973a) [Estribaciones de la Sierra Maestra, Guantánamo, Cuba, no date, no collector]. **Note:** This species was synonymized under *Didymocentrus gundlachii* (Karsch, 1880) by Armas (1973a), but the last was transferred to the genus *Cazierius* Francke, 1978 by Francke (1978).

70. *Diplocentrus roo* Armas & Martin-Frias, 2005:73–76, figs. 1A–D, 2A–C, 3A–D, 4, table I. Male holotype (3.3147), Chetumal, Quintana Roo, Mexico, 1993, no collector. **Note:** This specimen is broken in two parts at the level of tergite IV.

71. *Diplocentrus torrei* Moreno, 1938:198–199, 200, 201, láms. 16, figs. 16–19, 17, fig. 4. Male holotype (3.882), Yumurí, Baracoa, Oriente [now Guantanamo Province], 25 June, 1935, P. J. Bermudez. **Note:** This

species was synonymized under *Didymocentrus gundlachii* (Karsch, 1880) by Armas (1973), but the last was transferred to the genus *Cazierius* by Francke (1978).

72. *Diplocentrus trinitarius* Franganillo, 1930a:93, 95. Female lectotype (PF-754), designated by Armas (1973a), [Trinidad Mountains, Cuba, no date, no collector]. **Note:** This species was transferred to the genus *Didymocentrus* Kraepelin, 1905 by Armas (1973a).

73. *Heteronebo cicero* Armas & Marciano Fondeur, 1987:3–5. Male holotype (3.2913), Los Conuco, Guayacanes, San Pedro de Macoris Province, Dominican Republic, 6 April 1986, Abud & Marciano, under stone. **Note:** This species was transferred to *Cazierius* by Kovařík (1998), and confirmed by Teruel (2005).

74. *Heteronebo clareae* Armas, 2001:246, 249, 250, figs. 2A–D, tabla 1. Immature female holotype (3.2926), Spider Cave, Navassa Island, 8 May 1999, Clare Flemming & R. Mac Phee, in the soil, dark zone.

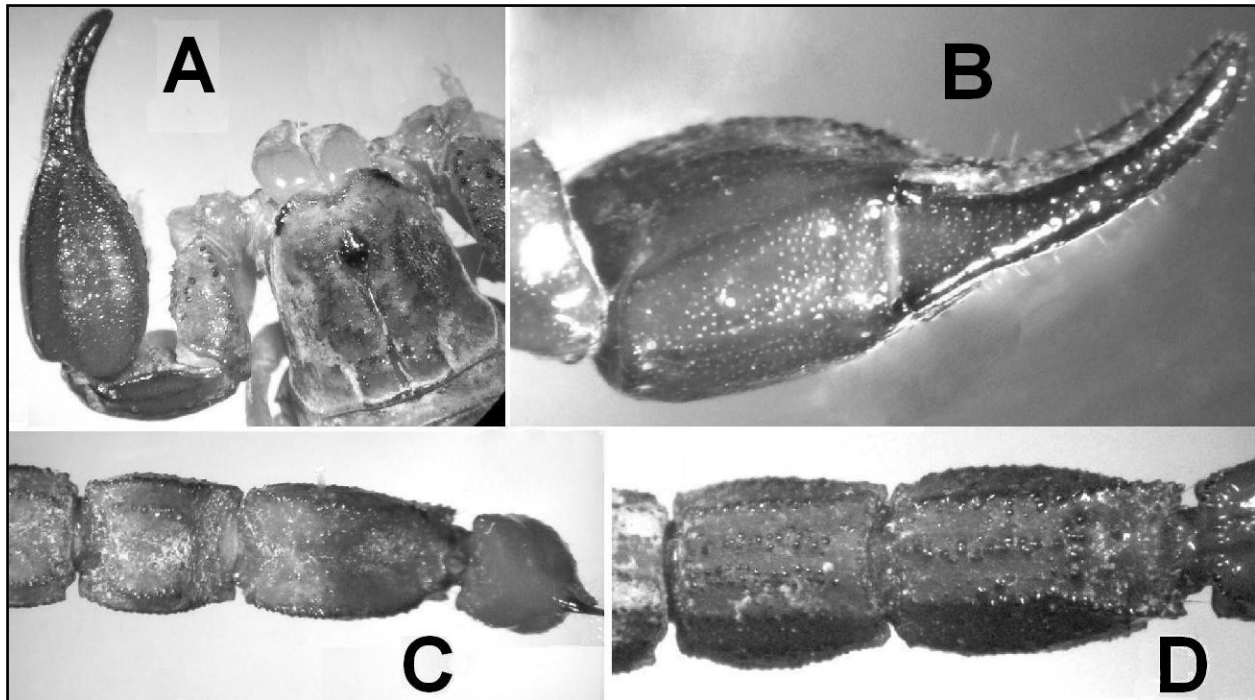


Figure 10: *Heteronebo pumilus*. Female holotype. **A**, Carapace and left pedipalp; **B**, pedipalpal chela, ventral aspect; **C**, metasomal segments IV–V and telson, dorsal aspect; **D**, metasomal segments IV–V, ventral aspect.

Note: This species is the only known troglomorphic scorpion from the West Indies (Armas, 2001).

75. *Heteronebo nibujon* Armas, 1984b:4, 7–10, 34, 36, figs. 1C, 7. Female holotype (3.1659), ca. 2 km S of Nibujón, Baracoa, Guantánamo Province, Cuba, November 1979, L. B. Zayas, in pine forest.

76. *Heteronebo pumilus* Armas, 1981a:2–5, figs. 1A–B, 3. Female holotype (3.1686), rocks in front of “Cayo La Vache” [Île à Vache], Les Cayes, Haiti, July 1950, F. de Zayas (Fig. 10A–D). **Note:** The only known specimens of this species are the holotype and an immature female.

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