

A New Genus of the Spider Family Caponiidae (Araneae, Haplogynae) from the West Indies

ALEXANDER SÁNCHEZ-RUIZ,¹ NORMAN I. PLATNICK,²
AND NADINE DUPÉRRÉ³

ABSTRACT

A new genus, *Cubanops*, is established for a distinctive group of caponiid spiders from the West Indies. *Nops ludovicorum* Alayón, from Cuba, and *Caponina darlingtoni* Bryant, from Hispaniola, are transferred to *Cubanops*. Nine new species are described from the Bahama Islands (*C. bimini*, *C. andersoni*), Cuba (*C. armasi*, *C. alayoni*, *C. juragua*, *C. granpiedra*, *C. terueli*, *C. tortuguilla*), and Hispaniola (*C. vega*). All these species are nopines (i.e., have subsegmented tarsi) and have the ventral translucent keel on the anterior metatarsi, and the translucent extension of the membrane between the anterior metatarsi and tarsi, that are also found in the genera *Nops* MacLeay, *Orthonops* Chamberlin, and *Tarsonops* Chamberlin. However, *Cubanops* species lack the dorsally extended inferior claw found in *Nops*, and differ from those of *Orthonops* and *Tarsonops* in having a distinctly patterned carapace, a widened labium, and bisegmented metatarsi IV. Two species groups are recognized within the genus, which probably occurs also in Puerto Rico and the Virgin Islands, as juveniles with these somatic characters have been taken on St. John.

¹Departamento de Zoología, Centro Oriental de Ecosistemas y Biodiversidad, Museo de Historia Natural Tomás Romay, Santiago de Cuba, Cuba (alex@bioeco.ciges.inf.cu).

²Senior Scientist, Division of Invertebrate Zoology, American Museum of Natural History; Adjunct Professor, Department of Biology, City College, City University of New York; Adjunct Professor, Department of Entomology, Cornell University; Adjunct Senior Research Scientist, Center for Environmental Research and Conservation, Columbia University (platnick@amnh.org).

³Scientific Assistant, Division of Invertebrate Zoology, American Museum of Natural History (nduperre@amnh.org).

INTRODUCTION

This paper, the eighth in a series on caponiid spiders, deals with a distinctive group of relatively small species known only from the West Indies. Two of these species have been described, but were misplaced. One species was originally described as *Nops ludovicornum* Alayón (1976), from Cuba, but both sexes lack the distinctively elongated and dorsally reflexed inferior claws characteristic of that genus. An earlier species was originally described as *Caponina darlingtoni* Bryant (1948) from Hispaniola. As indicated by Chickering (1967) and Platnick (1994a), this species is misplaced in *Caponina*; indeed, it has the subsegmented tarsi that are considered synapomorphic for the subfamily Nopinae, and is therefore misplaced at both the generic and subfamilial levels.

These West Indian spiders, placed below in the new genus *Cubanops*, show two other unusual leg characters that are often found in nopine genera (Platnick, 1995: figs. 6–11). The anterior metatarsi bear a translucent ventral keel (figs. 83, 125, 126), and there is a translucent ventral extension of the membrane separating the anterior metatarsi and tarsi (figs. 84, 85, 127, 128). However, these species differ from the other nopines with these leg modifications in having a distinctively patterned carapace (figs. 3, 19), a greatly widened labium (figs. 74, 117), and bisegmented metatarsi IV (figs. 87, 131).

Nopine females have historically been hard to work with, as their genitalia are often relatively unsclerotized and can be extremely difficult to resolve. Most conventional preparation techniques are inadequate for many of these species. For this study, the use of pancreatin digestion (Álvarez-Padilla and Hormiga, 2008) has proven to be essential. Our digestions suggest that adult females have a receptaculum that is distinctively triangular, and that is sclerotized only along its anterior margin; there is an accompanying, membranous structure that usually extends anteriorly of the sclerotized margin (figs. 138, 139). The shape of the sclerotized anterior margin seems to vary among species (e.g., figs. 16, 59, 163). A similarly sclerotized anterior margin seems also to be present in juvenile females (figs. 42, 43), but in those cases the shape is more rectangular, with the anterior margin extending further anteriorly at the sides of the receptaculum than it does at the middle. Although we have seen adults of *Cubanops* only from the Bahama Islands, Cuba, and Hispaniola, a few specimens sharing the somatic characters of the genus have been taken on St. John. Those specimens are apparently all juvenile females, as they have this less well-developed, more rectangular type of receptaculum. They do appear to belong to the genus, however, suggesting that *Cubanops* probably occurs in Puerto Rico as well as the Virgin Islands.

The species treated below seem to fall into two distinct species groups. In the *ludovicornum* group, the embolus is relatively short and wide (figs. 8, 9) and the female receptaculum is relatively low (figs. 15, 16). Aside from *C. ludovicornum*, two new species from the Bahama Islands (*C. bimini* and *C. andersoni*), one from Cuba (*C. armasi*), and *C. darlingtoni* (Bryant) from Hispaniola belong to this group. In the *alayoni* group, the embolus is relatively long and narrow (figs. 155, 156) and the female receptaculum is relatively high (figs. 162, 163). This group includes the new Cuban species *C. alayoni*, *C. juragua*, *C. granpiedra*, *C. terueli*, and *C. tortuguilla*, plus the new species *C. vega* from Hispaniola.

COLLECTIONS EXAMINED

AMNH	American Museum of Natural History, New York
BSC	Centro Oriental de Ecosistemas y Biodiversidad, Santiago de Cuba
IES	Instituto de Ecología y Sistemática, Havana, Cuba
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge

SYSTEMATICS

Cubanops, new genus

TYPE SPECIES: *Nops ludovicorum* Alayón (1976).

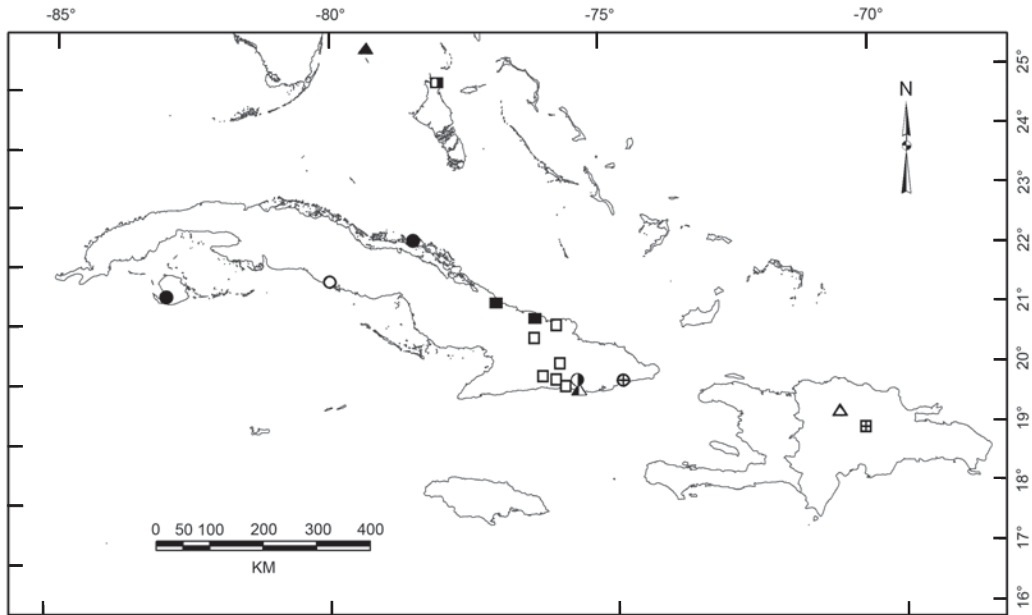
ETYMOLOGY: The generic name refers to the presence of the type species, previously misidentified as a member of *Nops*, in Cuba, and is masculine in gender.

DIAGNOSIS: Members of the genus can be separated from species of the previously known caponiid genera as follows: from the caponiine genera *Caponia* Simon (1887), *Caponina* Simon (1891), *Diploglena* Purcell (1904), *Calponia* Platnick (1993), *Notnops* Platnick (1994b), *Taintnops* Platnick (1994b), *Tisentnops* Platnick (1994b), *Laoponia* Platnick and Jäger (2008), and *Iraponia* Kranz-Baltensperger et al. (2009) by the presence of subsegmented tarsi; from *Nops* MacLeay (1839) by having normal, rather than greatly elongated and dorsally reflexed, inferior claws; from *Nopsides* Chamberlin (1924) by the presence of only two eyes; from *Orthonops* Chamberlin (1924) and *Tarsonops* Chamberlin (1924) by having a distinctly patterned carapace, a widened labium, and bisegmented metatarsi IV; and from the similarly patterned *Nyetnops* Platnick and Lise (2007) by having a translucent ventral keel on the anterior metatarsi and a translucent extension of the membrane separating the anterior metatarsi and tarsi.

DESCRIPTION: Small caponiids with two eyes (figs. 68, 69, 108, 109). Carapace broadly oval, widest at front of coxa II, anteriorly narrowed to less than half its maximum width (figs. 70, 110), pars cephalica slightly depressed behind ocular area (figs. 71, 111), without elevations extending toward coxae, pars thoracica short, sloping; surface of pars cephalica with scattered pits, surface of pars thoracica granulate; few dorsally directed strong bristles on clypeus (figs. 72, 107); scattered needlelike hairs most numerous around carapace margins; thoracic groove almost obsolete. Anterior median eyes dark, situated on slightly elevated tubercle, separated by about two-thirds their diameter, set back from anterior margin of clypeus by about twice their diameter, surrounded by oval ring of black pigment. Cheliceral paturon with scattered, long, weak bristles (figs. 78, 120); base of fang unmodified; median lamina long, with sharply pointed anteromedian tip (figs. 80, 81, 122, 123) contiguous with medially extended membranous lobe; lateral surface with stridulatory ridges (figs. 79, 121), pick on prolateral side of palpal femur, situated near proximal end

of segment (figs. 102, 103, 146, 147). Endites broadly convergent along midline (but not touching), distally rounded, medially narrowed, covered with scattered long setae, with strong distal serrula consisting of single tooth row (figs. 76, 77, 119). Labium much wider than long (figs. 74, 117), separated from sternum by depressed groove, with distinct medial invagination at tip, covered with few scattered setae; labrum with numerous long setae (figs. 75, 118). Sternum about as wide as long, surface with few weak pits and numerous stiff setae (figs. 73, 116), without radial furrows between coxae, not fused to carapace; cephalothoracic membranes with three very weakly sclerotized epimeric sclerites above coxae I, II, and III plus IV; long triangular sclerites extend from sternum between coxae I and II, II and III, and III and IV, shorter triangles extending to each coxa. Leg formula 4123; legs without spines; femora elongate, metatarsi I–III entire (figs. 86, 124, 130), metatarsus IV and tarsi I–IV divided into two subsegments (figs. 87, 131); distal half of metatarsi I and II with translucent ventral keel (figs. 82, 83, 125, 126, 129), membranes separating metatarsi and tarsi I and II with translucent ventral extension (figs. 84, 85, 127, 128); tarsi with three claws; paired claws with five or six teeth (figs. 92–95, 132–136), distal teeth largest; unpaired claw shorter than paired ones, without teeth. Sense organs scanned only in *C. alayoni*; tibiae, metatarsi, and tarsi with trichobothria in single row, bases ridged (figs. 106, 137); tarsal organ exposed, highly elaborate (figs. 88–91, 112–115); female palpal tarsus elongated, without claw, prolateral and ventral surfaces densely covered with strong setae, distodorsal surface with patch of shortened setae (figs. 144, 145). Abdomen with only slightly sclerotized epigastric and postepigastric scuta; epigastric region slightly protruding, lightly sclerotized, with two pairs of respiratory spiracles clustered around epigastric groove; anterior spiracles leading to wide, short tracheal trunk ending in numerous long tracheoles (fig. 138), posterior spiracles leading to two large tracheal trunks extending anteriorly into cephalothorax, plus single, much narrower trunk extending posteriorly for most of abdominal length and few short, small tracheoles extending posteriorly; six spinnerets (scanned only in *C. alayoni*), in typical caponiid arrangement (figs. 96, 140, Platnick et al., 1991: 56), in males, anterior laterals with single, presumably major ampullate gland spigot (fig. 97), posterior medians with two spigots (fig. 98), posterior laterals with two spigots (fig. 99); in females, anterior laterals with one major ampullate gland and two piriform gland spigots (fig. 141), posterior medians with large, flattened minor ampullate gland spigot and two aciniform gland spigots (fig. 142), posterior laterals with three spigots (fig. 143). Male palpal patella and tibia short, tibia excavated ventrally; cymbium elongated, not swollen, prolateral surface densely covered with strong setae (figs. 100, 101), distodorsal surface with patch of shortened setae (fig. 105); bulb stout, globose, originating near base of cymbium; embolus with elaborate tip (figs. 8–9, 104). Female genitalic area with postepigastric scutum wide, oval (figs. 14, 30). Internal female genitalia consisting of triangular, anteriorly directed receptaculum with sclerotized anterior margin closely followed anteriorly by membranous sac (figs. 138, 139).

DISTRIBUTION: Bahama Islands (Bimini, Andros), Cuba, and Hispaniola (map 1); probably also Puerto Rico and the Virgin Islands.



MAP 1. Records of *Cubanops* species. Black triangle, *C. bimini*; black circles: *C. ludovicornum*; black squares: *C. armasi*; white triangle: *C. darlingtoni*; black and white square: *C. andersoni*; black and white triangle: *C. juragua*; white squares: *C. alayoni*; black and white circle: *C. granpiedra*; white circle: *C. terueli*; circle with cross: *C. tortuguilla*; square with cross: *C. vega*.

KEY TO SPECIES OF *CUBANOPS*

1. Male embolus relatively short, wide (as in figs. 8, 9); female receptaculum relatively low (as in figs. 15, 16).....*ludovicornum* group, 2
- Male embolus relatively long, narrow (as in figs. 155, 156); female receptaculum relatively high (as in figs. 162, 163).....*alayoni* group, 8
2. Carapace with pattern consisting mostly of orange and white areas, with few dark maculations (figs. 3, 12); sternum with anterior white band (figs. 4, 13).....*C. ludovicornum*
- Carapace with pattern consisting of numerous dark maculations (as in figs. 19, 28); sternum with anterior dark markings (as in figs. 20, 29).....3
3. Males (those of *C. darlingtoni* unknown).....4
- Females (those of *C. andersoni* unknown).....6
4. Embolus with recurved tip (figs. 40, 41).....*C. andersoni*
- Embolus tip not recurved.....5
5. Embolus tip W-shaped (figs. 24, 25).....*C. bimini*
- Embolus tip V-shaped (figs. 51, 52).....*C. armasi*
6. Sternum with submarginal dark markings opposite endites and leg coxae (fig. 64); abdominal venter with median dark markings (fig. 62)*C. darlingtoni*

- Sternum with submarginal dark markings opposite endites only (figs. 29, 56);
abdominal venter without median dark markings (figs. 27, 54).....7
- 7. Posterior margin of epigastric area smoothly procurved (figs. 30, 31).....*C. bimini*
- Posterior margin of epigastric area undulating (figs. 57, 58).....*C. armasi*
- 8. Sternum with submarginal dark markings opposite endites and leg coxae
(figs. 151, 222).....9
- Sternum with submarginal dark markings opposite endites only
(as in figs. 167, 192).....10
- 9. Embolus tip straight (figs. 226, 227); receptacular triangle relatively low, wide
(figs. 233, 234).....*C. vega*
- Embolus tip curved (figs. 155, 156); receptacular triangle relatively high,
narrow (figs. 162, 163).....*C. alayoni*
- 10. Males (those of *C. tortuguilla* unknown).....11
- Females.....13
- 11. Subdistal process on embolus tip short, recurved (fig. 204).....*C. terueli*
- Subdistal process on embolus tip long, not recurved (figs. 172, 188).....12
- 12. Subdistal process on embolus tip reaching almost to embolus tip (fig. 188)..*C. granpiedra*
- Subdistal process on embolus tip shorter (fig. 172).....*C. juragua*
- 13. Anterior tip of receptaculum relatively narrow (figs. 178, 210).....14
- Anterior tip of receptaculum relatively wide (figs. 194, 217).....15
- 14. Anterior tip of receptaculum abruptly narrowed (fig. 210).....*C. terueli*
- Anterior tip of receptaculum gradually narrowed (fig. 178).....*C. juragua*
- 15. Sclerotized anterior margin of receptaculum much thicker laterally than
medially (fig. 217).....*C. tortuguilla*
- Sclerotized anterior margin of receptaculum relatively uniform in thickness
(fig. 194).....*C. granpiedra*

The *ludovicorum* Group

This group contains five species, with a relatively short embolus and a relatively low anterior receptaculum, found in the Bahama Islands, Cuba, and the Dominican Republic.

Cubanops ludovicorum (Alayón), new combination

Figures 1–16

Nops ludovicorum Alayón, 1976: 2, figs. 1A–C (female holotype from Cocodrilo, Isla de la Juventud, Cuba, in IES; examined). — Alayón, 1977: 2, fig. 1A–B (male).



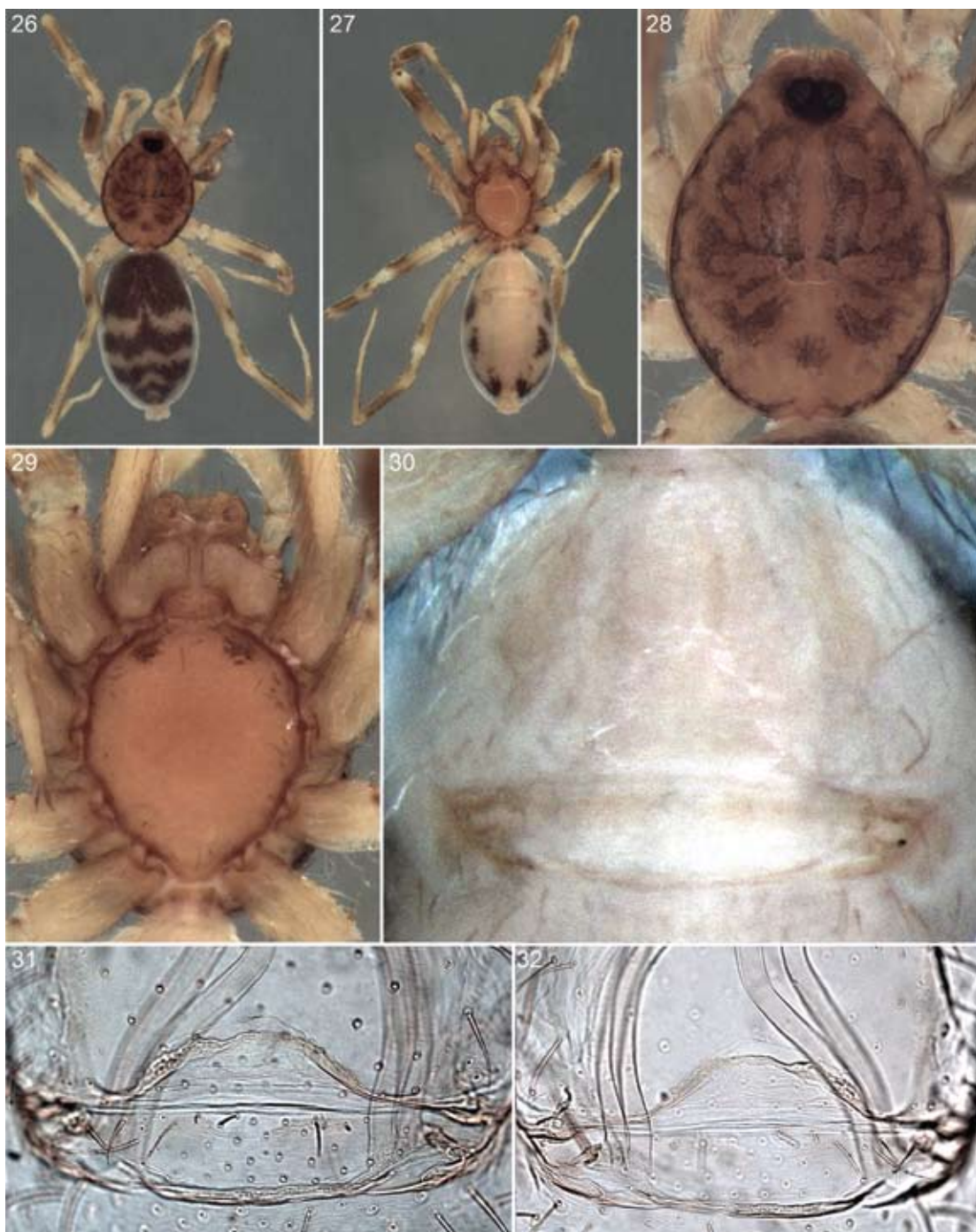
FIGS. 1–9. *Cubanops ludovicornum* (Alayón), male. 1. Habitus, dorsal view. 2. Same, ventral view. 3. Carapace, dorsal view. 4. Sternum and mouthparts, ventral view. 5. Epigastric region, ventral view. 6. Left palp, prolateral view. 7. Same, retrolateral view. 8. Bulb and embolus, prolateral view. 9. Embolus tip, prolateral view.



FIGS. 10–16. *Cubanops ludovicorum* (Alayón), female. **10.** Habitus, dorsal view. **11.** Same, ventral view. **12.** Carapace, dorsal view. **13.** Sternum and mouthparts, ventral view. **14.** Epigastric region, ventral view. **15.** Internal genitalia, ventral view. **16.** Same, dorsal view.



FIGS. 17–25. *Cubanops bimini*, new species, male. 17. Habitus, dorsal view. 18. Same, ventral view. 19. Carapace, dorsal view. 20. Sternum and mouthparts, ventral view. 21. Epigastric region, ventral view. 22. Left palp, prolateral view. 23. Same, retrolateral view. 24. Bulb and embolus, prolateral view. 25. Embolus tip, prolateral view.



FIGS. 26–32. *Cubanops bimini*, new species, female. 26. Habitus, dorsal view. 27. Same, ventral view. 28. Carapace, dorsal view. 29. Sternum and mouthparts, ventral view. 30. Epigastric region, ventral view. 31. Internal genitalia, ventral view. 32. Same, dorsal view.

DIAGNOSIS: Males resemble those of *C. bimini* in having a long dorsal extension on the tip of the embolus, but have a single ventral embolar extension (fig. 9); females also resemble those of *C. bimini* but have the anterior margin of the receptaculum extending farther anteriorly at the midline than in that species (figs. 15, 16).

MALE: Total length 2.76 (figs. 1–9). Carapace orange with pair of large, rectangular, paramedian white areas, with posterolateral extensions. Sternum dark orange, with pale yellow submarginal band. Dorsum of abdomen light purple with three white chevrons. Legs pale yellow, with sides of anterior femora slightly darkened. Tip of embolus with long extension on dorsal surface, with shorter extension on ventral surface producing almost chelate appearance (fig. 9).

FEMALE: Total length 3.81 (figs. 10–16). Coloration as in male except legs light brown. Genitalia with broadly triangular receptaculum (figs. 15, 16).

MATERIAL EXAMINED: CUBA: **Ciego de Ávila**: Camino Cacasilla, Cayo Coco, Feb. 21, 1995, under rock in forest (M. López, BSC 588), 1 ♀; Cueva del Jabalí, Cayo Coco, Jan. 27, 1995 (M. López, BSC 595), 1 ♀. **Isla de la Juventud** (= Isla de Pinos): Cocodrilo (= Jacksonville), June 15, 1974 (L. Hernández, L. de Armas, IES T2), 1 ♀ (holotype); road between Cocodrilo and Cayo Piedras, Apr. 23, 1976 (G. Alayón, IES), 1 ♂.

DISTRIBUTION: Central Cuba and the Isla de la Juventud.

Cubanops bimini, new species

Figures 17–32

TYPES: Male holotype and female allotype from South Bimini, Bahama Islands (May 1951; W. Gertsch, M. Cazier), deposited in AMNH.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

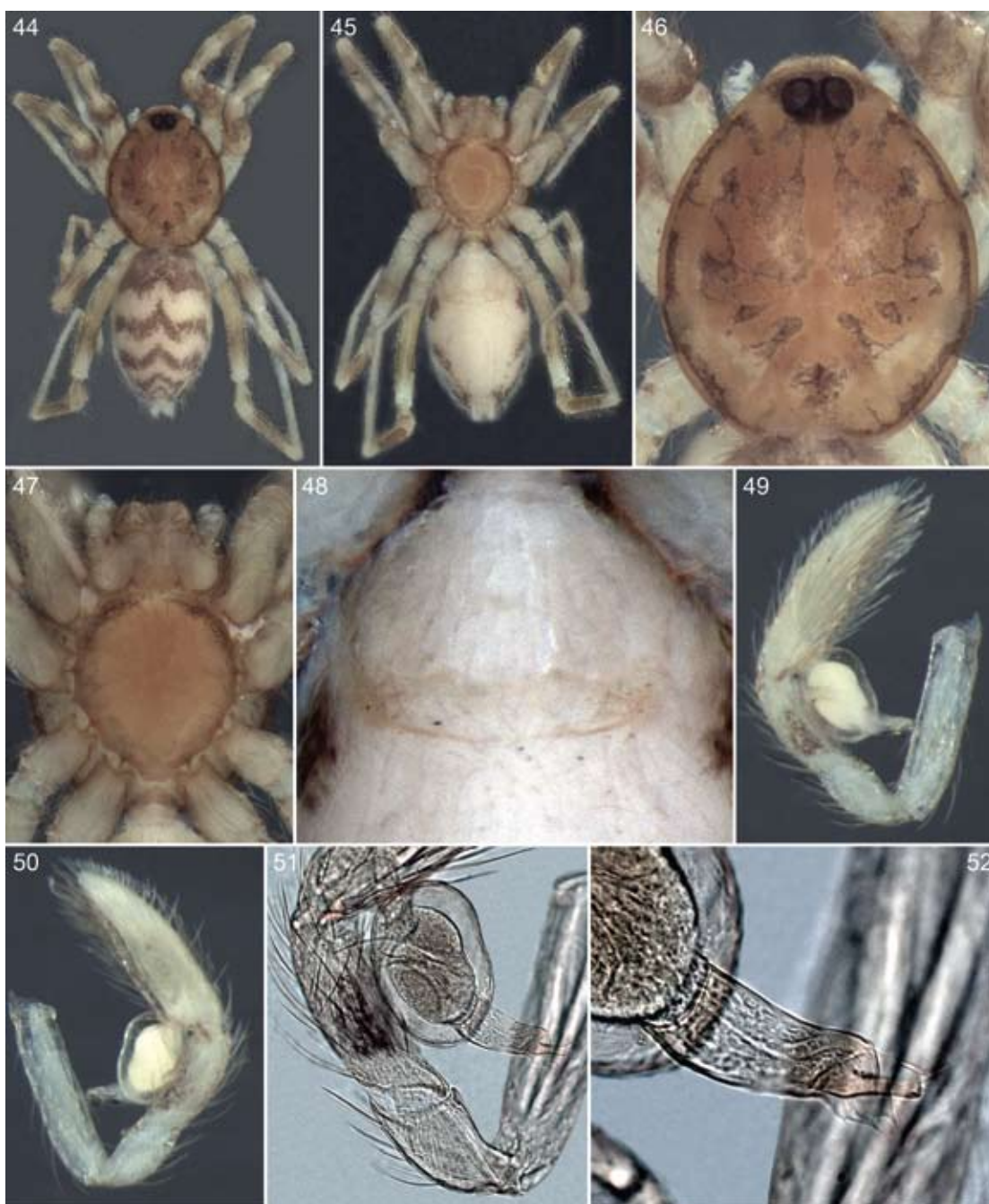
DIAGNOSIS: This species seems closest to *C. ludovicorum* but can be distinguished by the very different color pattern on the carapace (figs. 19, 28) as well as the much more elaborate embolus tip of males (fig. 25) and the medially shorter genitalic receptaculum of females (fig. 32).

MALE: Total length 2.29 (figs. 17–25). Carapace pale yellow, with dark purple margins and median reticulations, those reticulations darkest opposite coxa II. Sternum pale orange, with darker, rebordered margins. Dorsum of abdomen light purple with four white chevrons. Legs pale yellow, with darkened sides on distal halves of all femora and tibiae. Tip of embolus with long extension on dorsal surface, followed ventrally by one long and three short prongs (fig. 25).

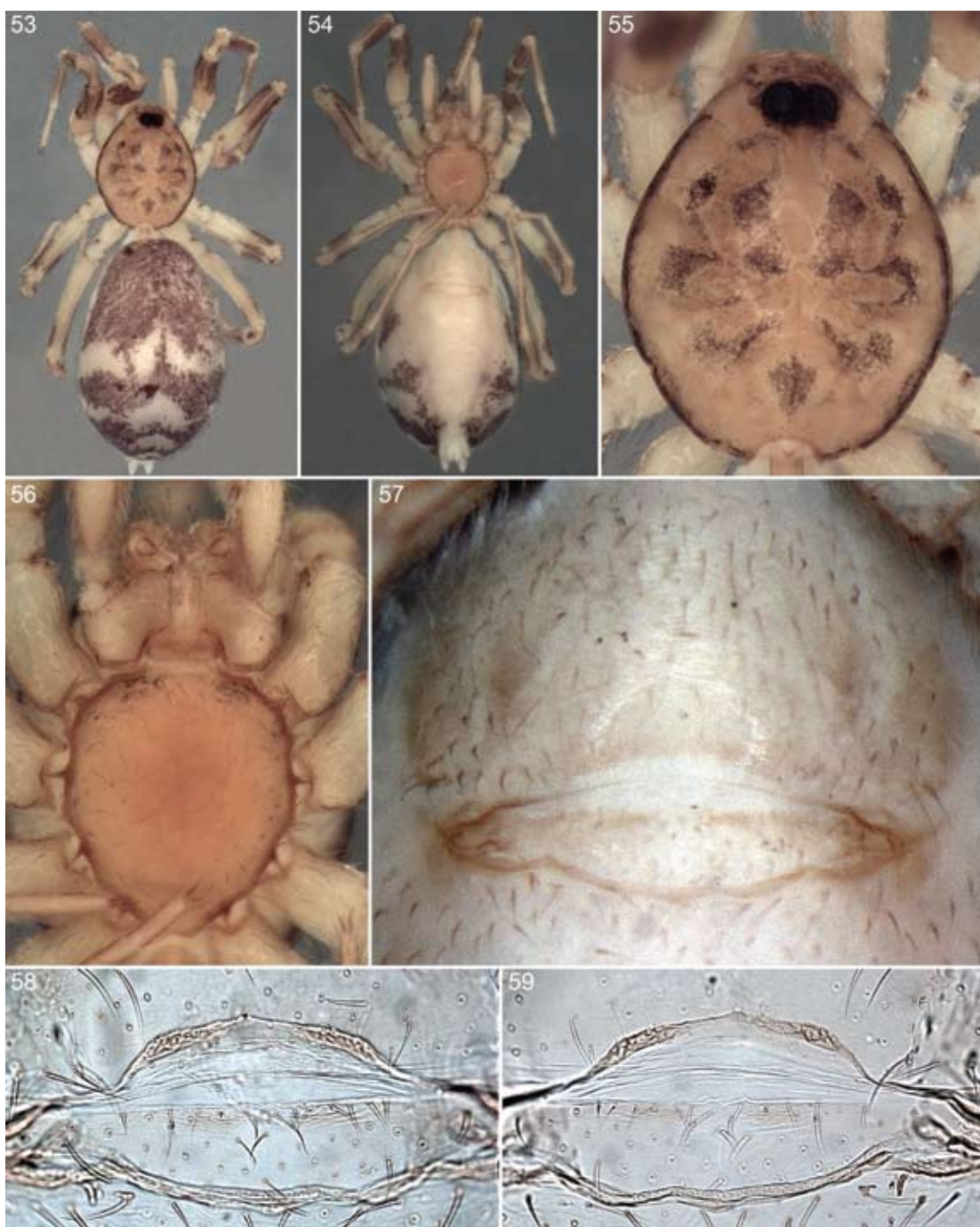
FEMALE: Total length 3.59 (figs. 26–32). Coloration as in male except sternum with dark patches opposite coxae I and II, abdominal chevrons smaller. Genitalia with relatively short, broadly triangular receptaculum (figs. 31, 32).



FIGS. 33–43. *Cubanops andersoni*, new species, male (except figs. 42, 43). 33. Habitus, dorsal view. 34. Same, ventral view. 35. Carapace, dorsal view. 36. Sternum and mouthparts, ventral view. 37. Epigastric area, ventral view. 38. Left palp, prolateral view. 39. Same, retrolateral view. 40. Bulb and embolus, prolateral view. 41. Embolus tip, prolateral view. 42. Presumably juvenile female, epigastric area, ventral view. 43. Same, dorsal view.



FIGS. 44–52. *Cubanops armasi*, new species, male. 44. Habitus, dorsal view. 45. Same, ventral view. 46. Carapace, dorsal view. 47. Sternum and mouthparts, ventral view. 48. Epigastric region, ventral view. 49. Left palp, prolateral view. 50. Same, retrolateral view. 51. Bulb and embolus, prolateral view. 52. Embolus tip, prolateral view.



FIGS. 53–59. *Cubanops armasi*, new species, female. 53. Habitus, dorsal view. 54. Same, ventral view. 55. Carapace, dorsal view. 56. Sternum and mouthparts, ventral view. 57. Epigastric region, ventral view. 58. Internal genitalia, ventral view. 59. Same, dorsal view.

OTHER MATERIAL EXAMINED: BAHAMA ISLANDS: **South Bimini**: no specific locality, May 1951 (W. Gertsch, M. Cazier, AMNH), 3♂, 2♀, June 1951 (M. Cazier, C., P. Vaurie, AMNH), 1♂, 3♀.

DISTRIBUTION: South Bimini, Bahama Islands.

Cubanops andersoni, new species

Figures 33–43

TYPE: Male holotype taken in a Berlese sample of litter from a coastal coppice at Pigeon Cay, Andros Island, Bahama Islands (May 1–6, 1994; R. Anderson), deposited in AMNH.

ETYMOLOGY: The specific name is a patronym in honor of Robert Anderson of the Canadian Museum of Nature, collector of the holotype and many other unusual spiders.

DIAGNOSIS: Males resemble those of *C. ludovicorum* and *C. bimini*, but have a much shorter dorsal extension on the embolar tip (fig. 41).

MALE: Total length 2.89 (figs. 33–41). Carapace pale yellow, with dark purple margins and median reticulations, those reticulations darkest opposite coxa II. Sternum pale orange, with pair of anterolateral dark spots just posterior of endites. Dorsum of abdomen light purple with five narrow, white chevrons. Legs pale yellow, with darkened sides on distal halves of anterior femora. Tip of embolus with short, rounded extension on dorsal surface, followed ventrally by hooked extension (fig. 41).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: Two males taken with the type, along with a female that is apparently juvenile (figs. 42, 43), all in AMNH.

DISTRIBUTION: Andros Island, Bahama Islands.

Cubanops armasi, new species

Figures 44–59

TYPES: Male holotype (and male paratype) from Puerto Manatí, Las Tunas, Cuba (Dec. 1981; L. F. de Armas), deposited in BSC (609).

ETYMOLOGY: The specific name is a patronym in honor of the eminent Cuban arachnologist, Luis F. de Armas, collector of the holotype.

DIAGNOSIS: Males can easily be recognized by the basally thickened embolus with a short, bifid tip (figs. 51, 52), females by the relatively wide anterior margin of the receptaculum (figs. 58, 59). Males and females have not been collected together, but are here matched because of their geographic proximity and their mutual affinities to other members of the species group.



FIGS. 60–67. *Cubanops darlingtoni* (Bryant), female. 60. Habitus, dorsal view. 61. Carapace and abdomen, dorsal view. 62. Same, ventral view. 63. Carapace, dorsal view. 64. Sternum and mouthparts, ventral view. 65. Epigastric region, ventral view. 66. Internal genitalia, ventral view. 67. Same, dorsal view.

MALE: Total length 2.40 (figs. 44–52). Carapace pale yellow, with dark purple margins separated from median reticulations by distinct submarginal unmarked bands, reticulations darker laterally than medially. Sternum pale orange, with pair of anterolateral dark spots just posterior of endites. Dorsum of abdomen light purple with four white chevrons, chevrons largest anteriorly. Legs pale yellow, with darkened sides on distal halves of femora, tibiae, and anterior metatarsi. Base of embolus wide, tip bifid (figs. 51, 52).

FEMALE: Total length 3.98 (figs. 53–59). Coloration as in male except posterior metatarsi also with darkened sides. Genitalia with short, broad anterior margin occupying more than three-fourths of receptacular width (figs. 58, 59).

OTHER MATERIAL EXAMINED: CUBA: **Holguín**: Loma de Forestal, 1976, under rocks (G. Alayón, IES), 2♀.

DISTRIBUTION: Northeastern Cuba (Las Tunas and Holguín provinces).

Cubanops darlingtoni (Bryant), new combination

Figures 60–67

Caponina darlingtoni Bryant, 1948: 342 (female holotype from San José de las Matas, Santiago de los Caballeros, Dominican Republic, in MCZ; examined).

DIAGNOSIS: Females resemble those of the other members of the *ludovicorum* group, but have the membranous sac extending far more anteriorly of the sclerotized anterior margin of the receptaculum (figs. 66, 67).

MALE: Unknown.

FEMALE: Total length 3.82 (figs. 60–67). Carapace pale yellow, with dark purple margins separated from median reticulations by distinct submarginal unmarked bands, reticulations darker laterally than medially. Sternum dark orange, with submarginal darkened spots opposite each coxa. Anterior portion of abdominal dorsum dark purple, with median, longitudinal white stripe, posterior portion with three white chevrons, chevrons largest anteriorly. Femora, patellae, tibiae, and metatarsi darkened except for subproximal pale areas on femora and subdistal pale areas on each of those segments. Genitalia with widely arched anterior receptacular margin, membranous sac extending far anterior of that margin (figs. 66, 67).

MATERIAL EXAMINED: DOMINICAN REPUBLIC: **Santiago de los Caballeros**: San José de las Matas, June 1938, elev. 1500 ft (P. Darlington, MCZ), 1♀ (holotype).

DISTRIBUTION: Santiago de los Caballeros province, Dominican Republic, Hispaniola.

The *alayoni* Group

Known only from Cuba and the Dominican Republic, this group contains six species with a relatively long embolus and a relatively high anterior receptaculum.

Cubanops alayoni, new species

Figures 68–163

Types: Male holotype and female allotype taken under rocks at an elevation of 630 m at Paso la Mina, Monte Viset, 4 km S of Cruce de los Baños, Tercer Frente municipality, Santiago de Cuba, Cuba (May 12, 2004; R. Teruel), deposited in BSC (596).

Etymology: The specific name is a patronym in honor of Giraldo Alayón, the first arachnologist to study these spiders in Cuba.

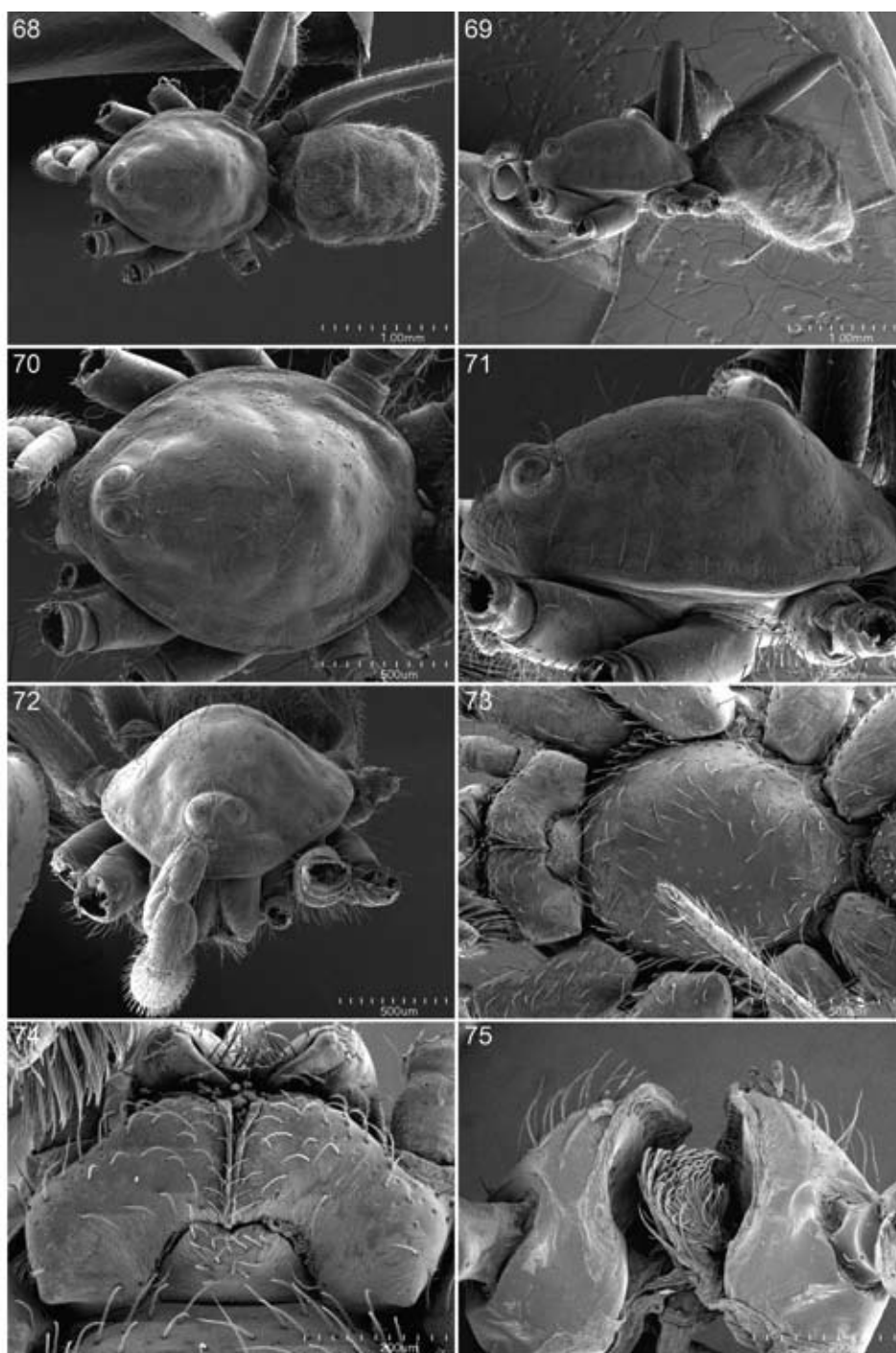
Diagnosis: Males differ from those of the other members of the species group in having the tip of the embolus wide, extending far beyond the subdistal process, and bearing subdistal as well as distal tiny prongs (figs. 104, 155, 156). Females resemble those of *C. granpiedra* and *C. tortuguilla* but have the median portion of the sclerotized anterior margin as wide as the lateral portions (figs. 162, 163).

Male: Total length 2.93 (figs. 68–106). Carapace pale yellow, with dark purple margins separated from median reticulations by distinct submarginal unmarked bands, reticulations darker laterally than medially. Sternum dark orange, with submarginal darkened spots opposite endites and coxae I and II. Abdominal dorsum dark purple, with four white chevrons, chevrons largest anteriorly. Femora, patellae, tibiae, and metatarsi darkened except for subproximal pale areas on femora and subdistal pale areas on patellae. Embolus long, narrow, subdistal process situated far from tip, distally curved; embolus tip wide, with subdistal as well as distal tiny prongs (figs. 104, 155, 156).

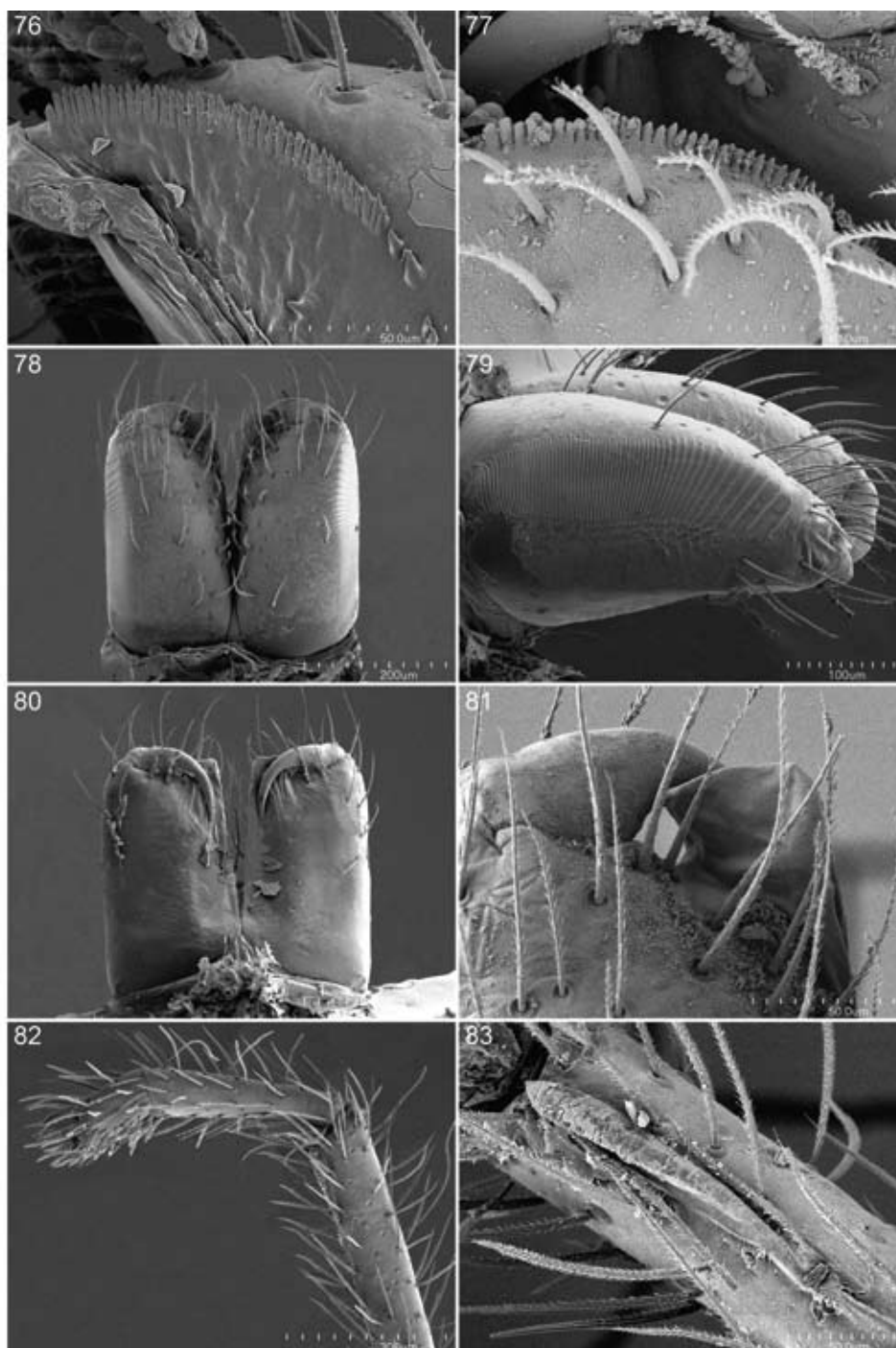
Female: Total length 2.93 (figs. 107–163). Coloration as in male except sternum with slight darkening opposite posterior coxae, abdomen with smaller white chevrons. Anterior receptaculum triangular, high, anteriorly rounded, with sclerotized anterior margin as thick medially as laterally (figs. 162, 163).

Other material examined: CUBA: **Holguín:** Cerro Las Tinajitas, Rafael Freyre, June 18, 2001, under rock (R. Teruel, Y. Pérez, BSC 607), 1♀, Oct. 9, 2002, under rock (R. Teruel, Y. Pérez, BSC 590), 1♀; Loma de la Cruz, Sept. 20, 2000, under rock, secondary forest (R. Teruel, BSC), 1♀. **Santiago de Cuba:** Jardín Botánico de Santiago de Cuba, Nov. 6, 1997, under rock (D. Maceira, BSC 594), 2♀, June 17, 1998, under rock (A. Sánchez, BSC), 1♀; La Cantera, Mella municipality, May 28, 2005, under rock (A. Sánchez, BSC 601), 2♂; Lomas al N del Cobre, Sept. 10, 2000, under rock (R. Teruel, BSC), 2♀; Paso la Mina, Monte Viset, 4 km S Cruce de los Baños, Tercer Frente municipality, May 12, 2004 (R. Teruel, BSC 592), 1♂, 3♀.

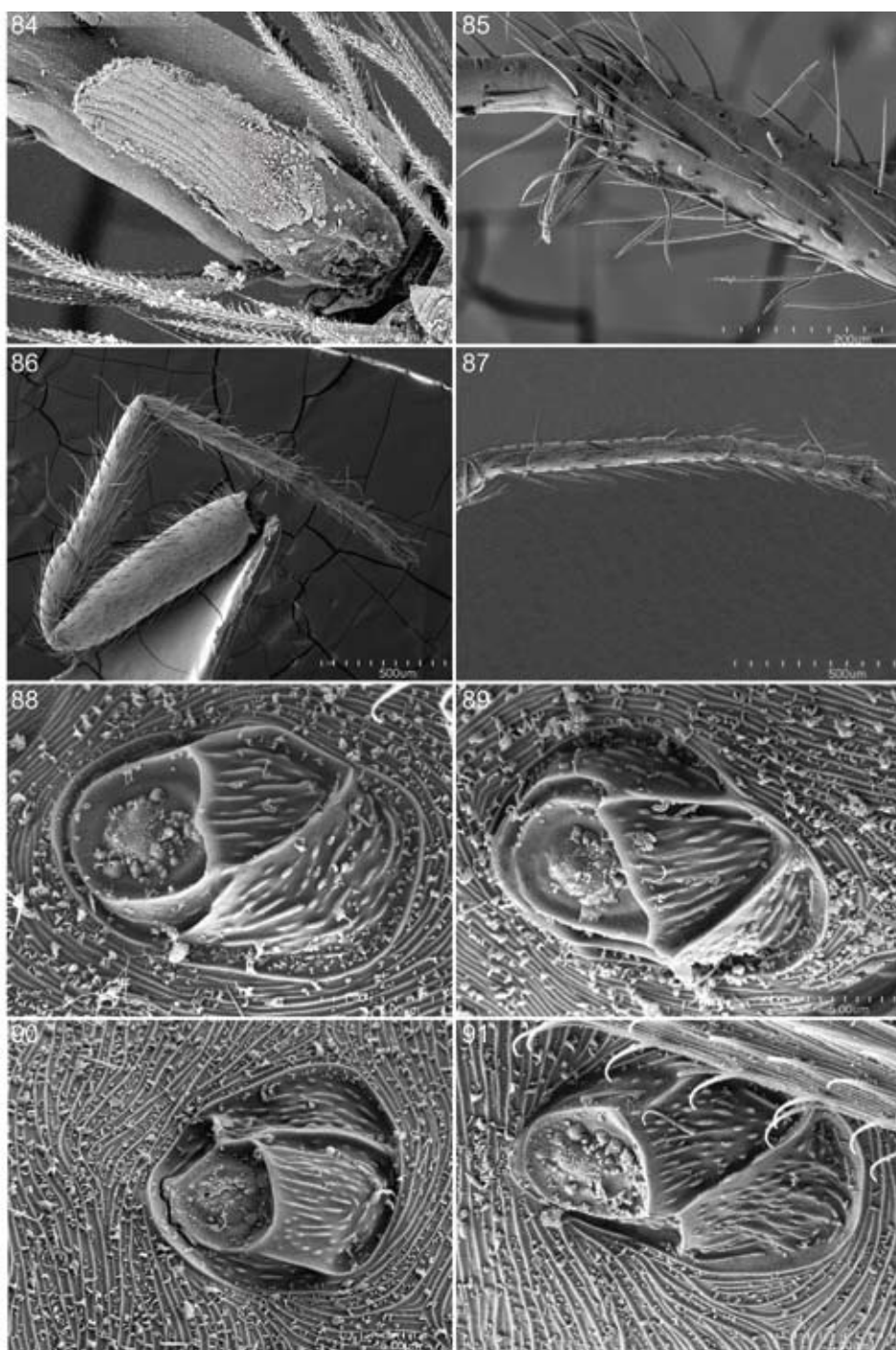
Distribution: Eastern Cuba (Holguín and Santiago de Cuba provinces).



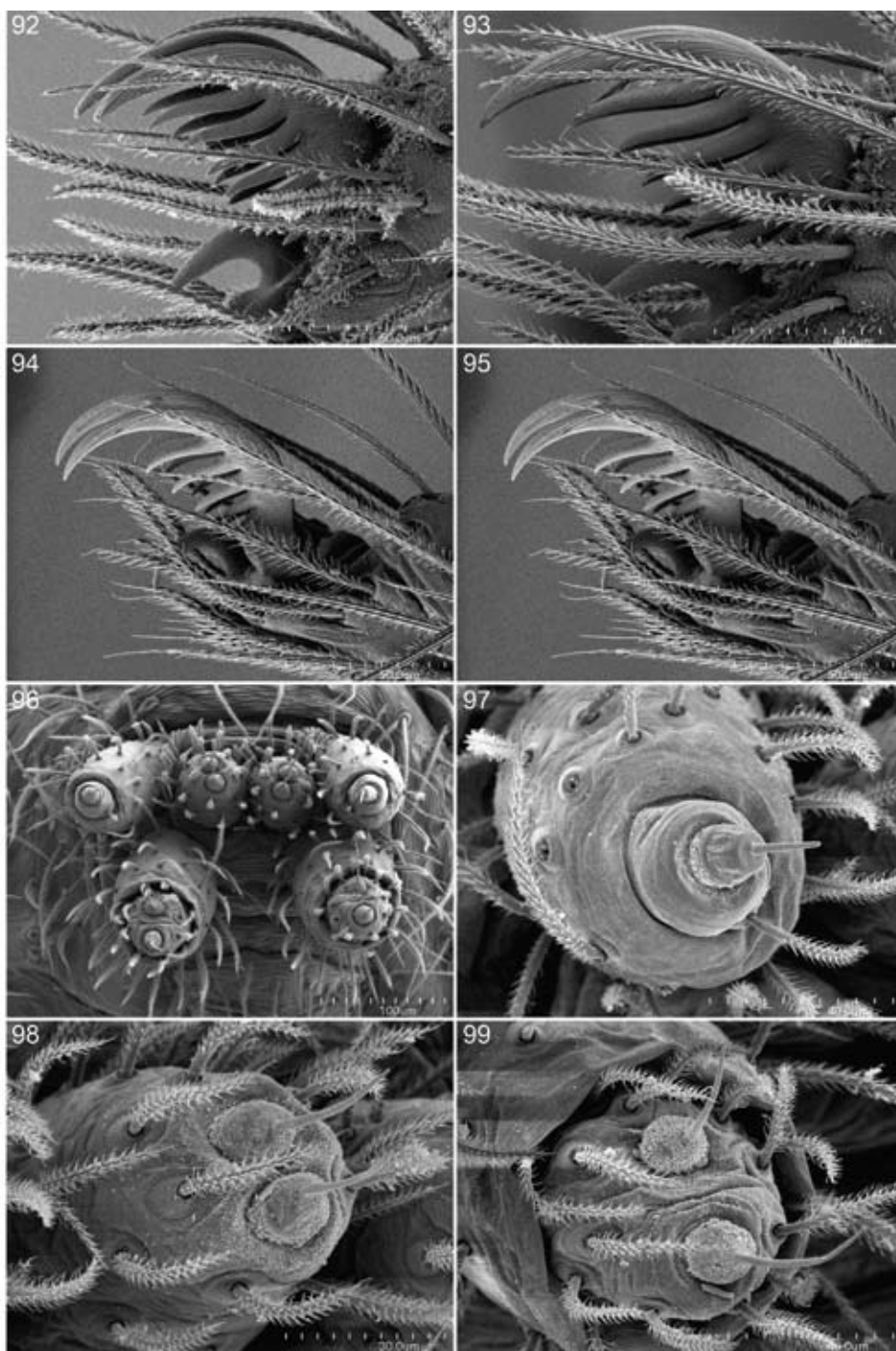
FIGS. 68–75. *Cubanops alayoni*, new species, male. 68. Habitus, dorsal view. 69. Same, lateral view. 70. Carapace, dorsal view. 71. Same, lateral view. 72. Same, anterior view. 73. Sternum and mouthparts, ventral view. 74. Labium and endites, ventral view. 75. Labrum and endites, dorsal view.



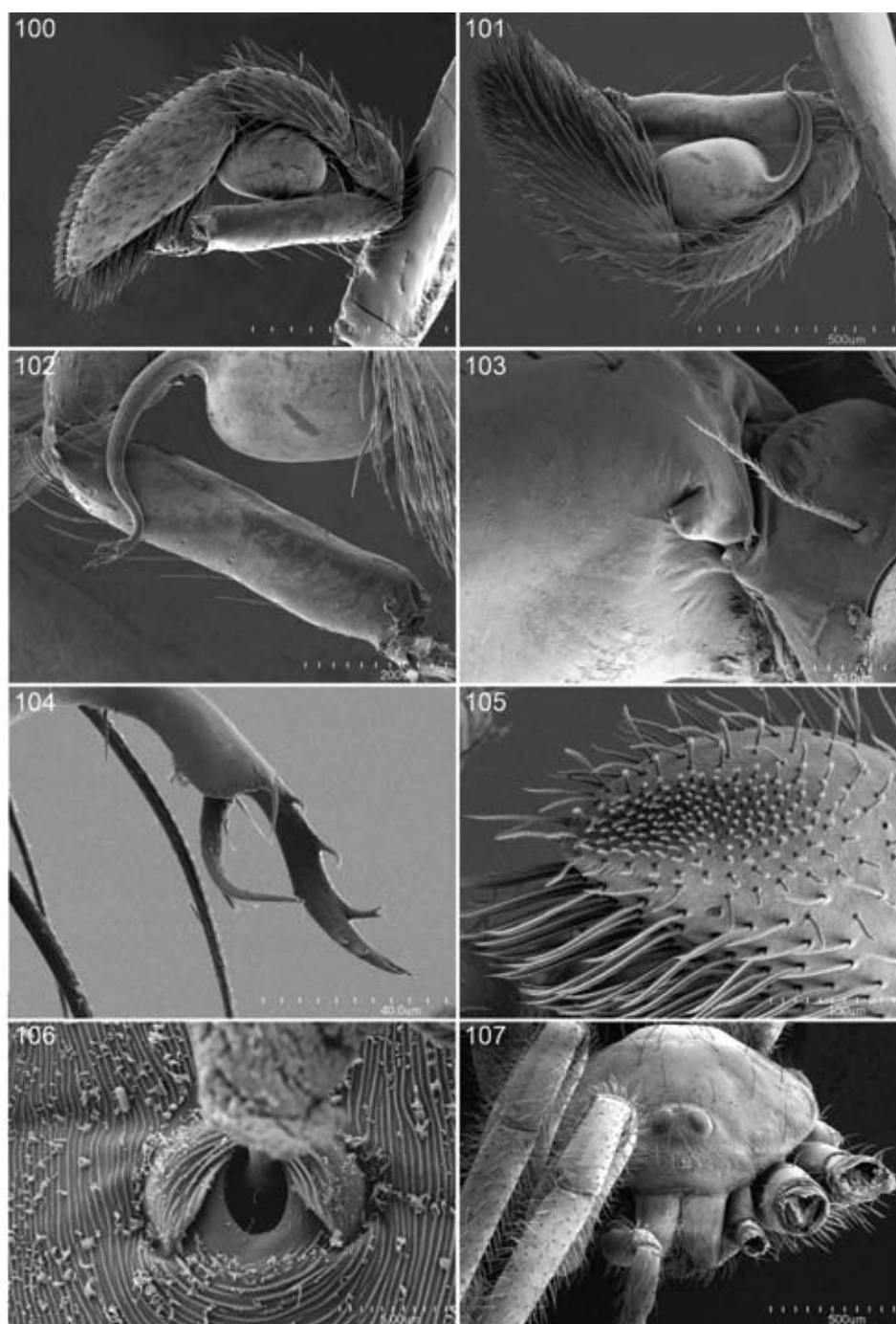
FIGS. 76–83. *Cubanops alayoni*, new species, male. 76. Serrula, dorsal view. 77. Same, ventral view. 78. Chelicerae, anterior view. 79. Same, lateral view. 80. Same, posterior view. 81. Tip of right chelicera, posterior view. 82. Metatarsus and tarsus I, lateral view. 83. Distal tip of metatarsus I, ventral view.



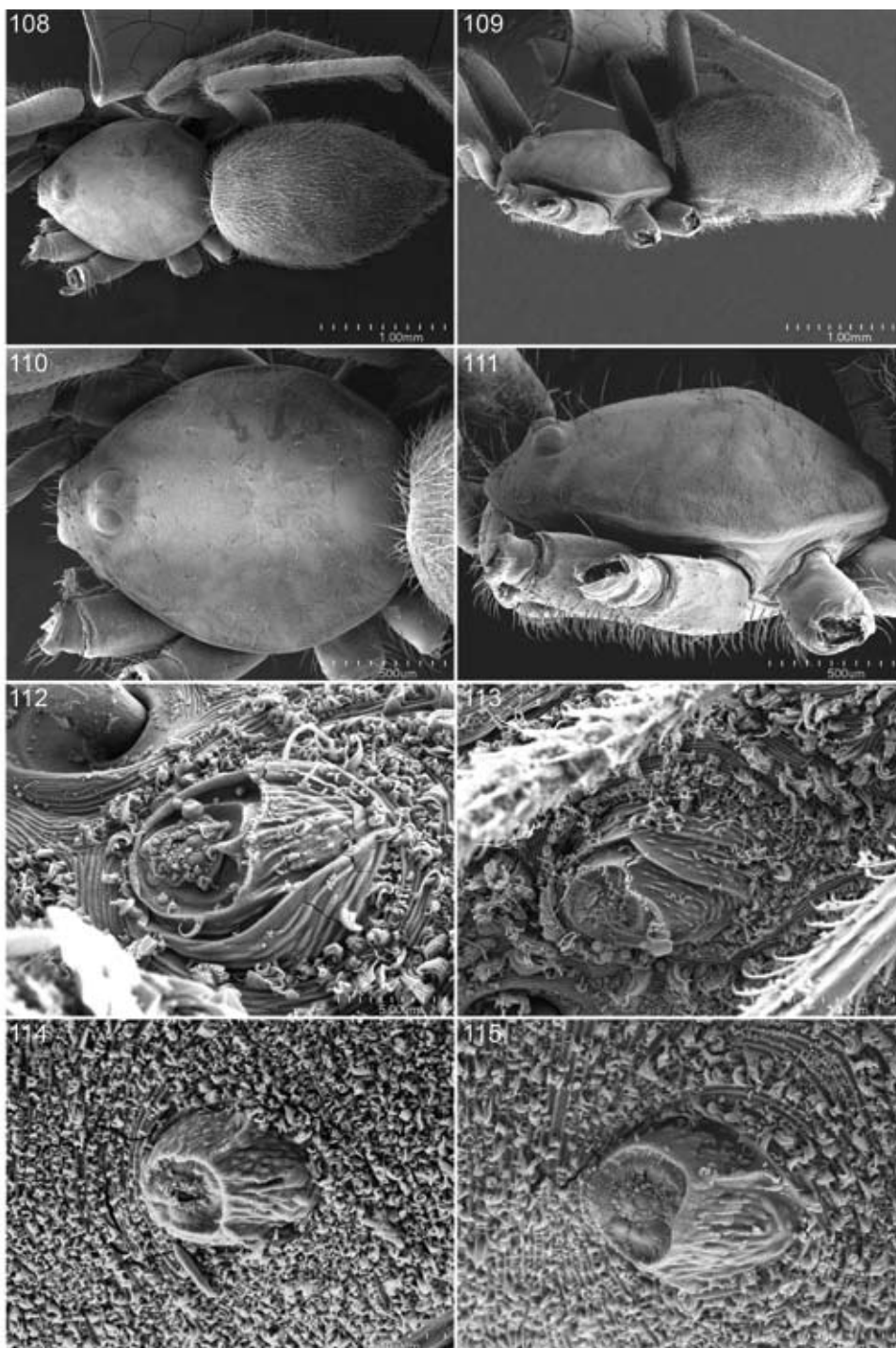
FIGS. 84–91. *Cubanops alayoni*, new species, male. **84.** Extension of metatarsal membrane under tarsus I, ventral view. **85.** Distal tip of metatarsus II, lateral view. **86.** Leg III, lateral view (note unisegmented metatarsus). **87.** Metatarsus IV, lateral view. **88.** Tarsal organ from leg I, dorsal view. **89.** Same, leg II. **90.** Same, leg III. **91.** Same, leg IV.



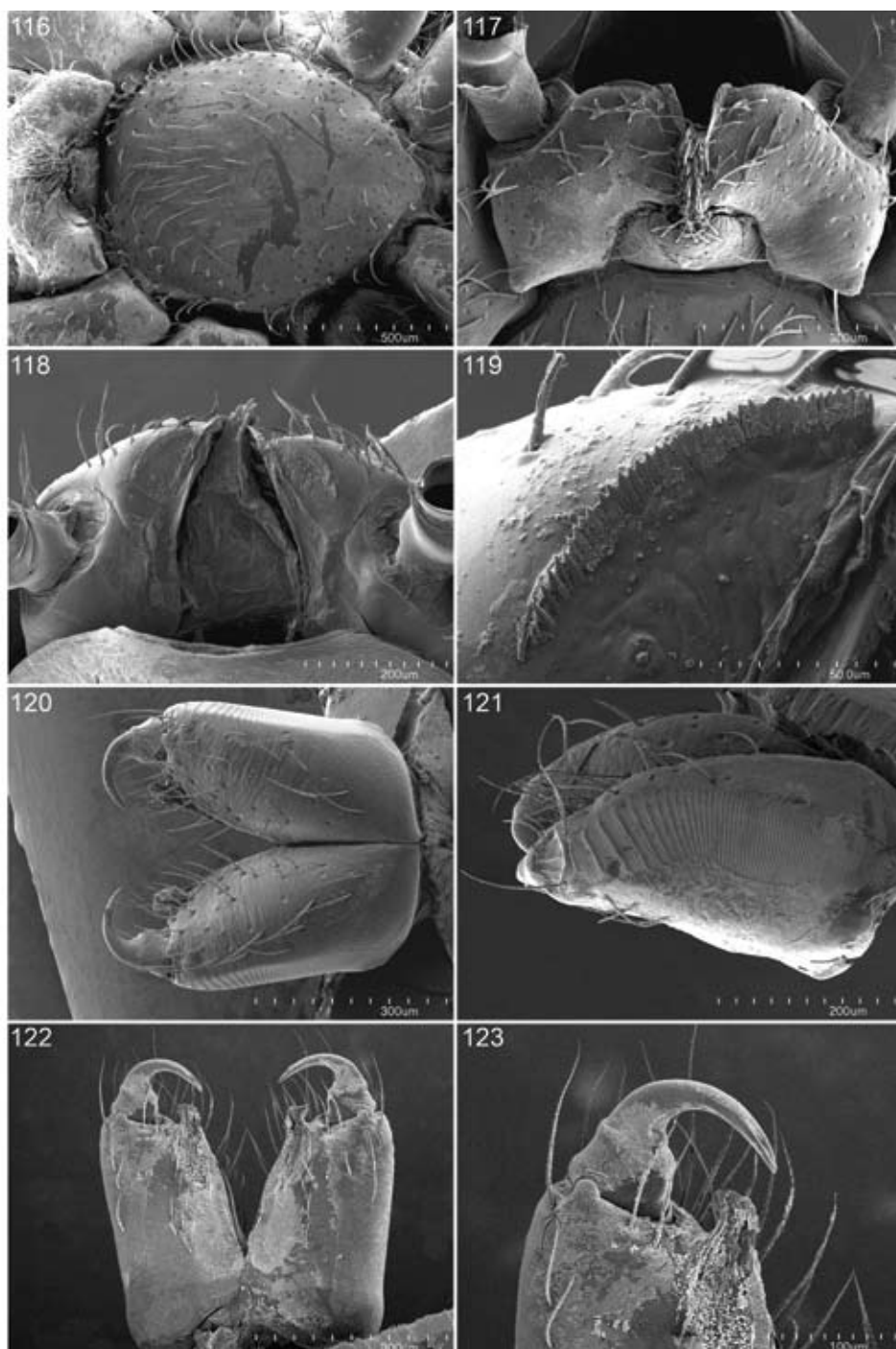
FIGS. 92-99. *Cubanops alayoni*, new species, male. 92. Claws of leg I, lateral view. 93. Same, leg II. 94. Same, leg III. 95. Same, leg IV. 96. Spinnerets, distal view. 97. Anterior lateral spinneret, distal view. 98. Posterior median spinneret, distal view. 99. Posterior lateral spinneret, distal view.



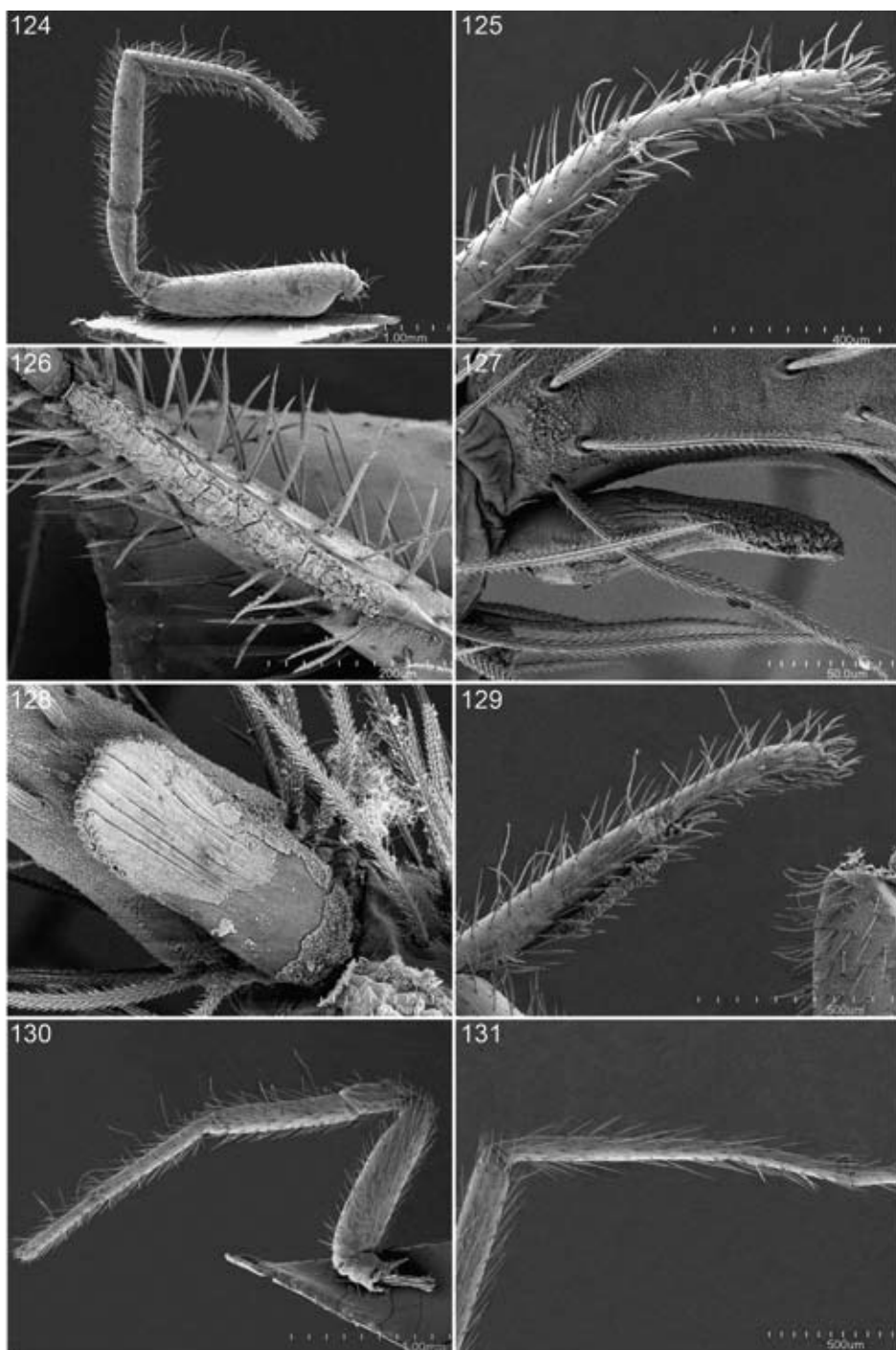
FIGS. 100–107. *Cubanops alayoni*, new species, male (except fig. 107). **100.** Palp, retrolateral view. **101.** Same, prolateral view. **102.** Palpal femur, prolateral view. **103.** Stridulatory pick at base of palpal femur, prolateral view. **104.** Tip of embolus, prolateral view. **105.** Tip of palpal tarsus, dorsal view. **106.** Trichobothrial base from tibia III, dorsal view. **107.** Female, carapace, anterior view.



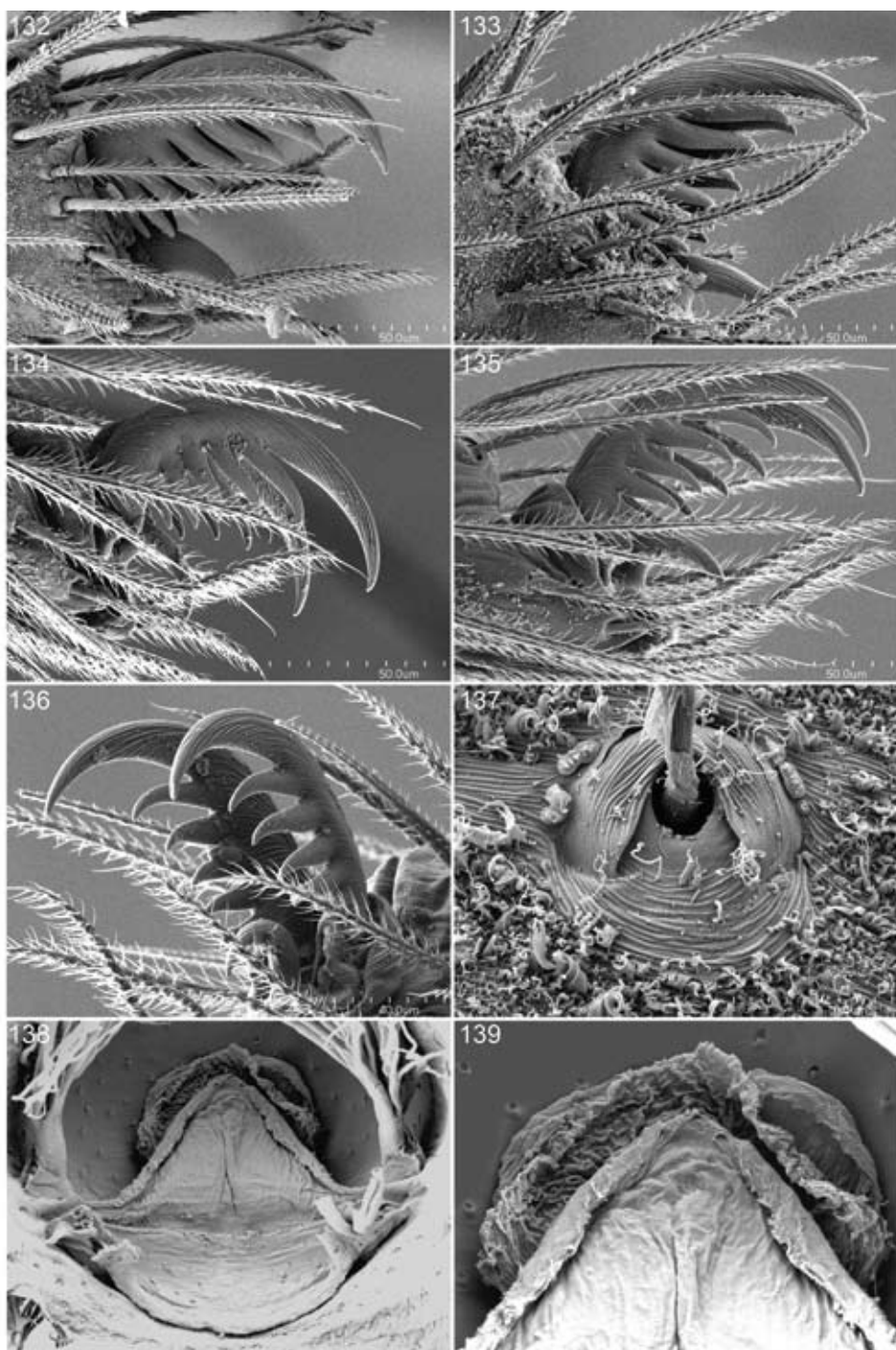
FIGS. 108–115. *Cubanops alayoni*, new species, female. **108.** Habitus, dorsal view. **109.** Same, lateral view. **110.** Carapace, dorsal view. **111.** Same, lateral view. **112.** Tarsal organ from leg I, dorsal view. **113.** Same, leg II. **114.** Same, leg III. **115.** Same, leg IV.



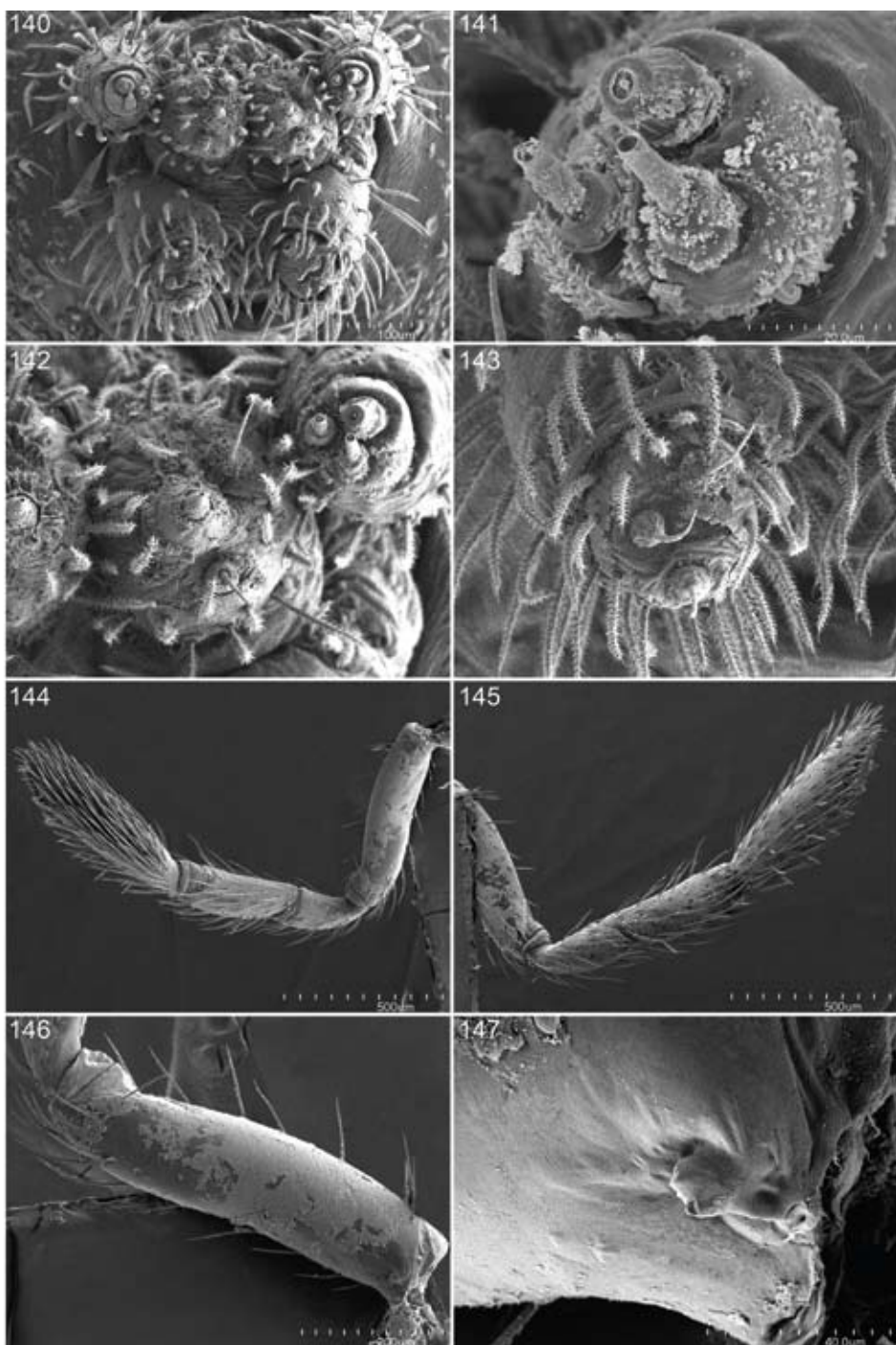
FIGS. 116–123. *Cubanops alayoni*, new species, female. 116. Sternum and mouthparts, ventral view. 117. Labium and endites, ventral view. 118. Labium and endites, dorsal view. 119. Serrula, dorsal view. 120. Chelicerae, anterior view. 121. Same, lateral view. 122. Same, posterior view. 123. Tip of right chelicera, posterior view.



FIGS. 124–131. *Cubanops alayoni*, new species, female. **124.** Leg I, lateral view. **125.** Distal tip of metatarsus I, and tarsus, lateral view. **126.** Distal tip of metatarsus I, ventral view. **127.** Extension of metatarsal membrane under tarsus I, lateral view. **128.** Same, ventral view. **129.** Metatarsus and tarsus II, lateral view. **130.** Leg III, lateral view. **131.** Metatarsus IV, lateral view.



FIGS. 132–139. *Cubanops alayoni*, new species, female. **132.** Claws of leg I, lateral view. **133.** Same, leg II. **134.** Same, leg III. **135.** Same, leg IV. **136.** Claws of leg IV, oblique ventral view. **137.** Trichobothrial base from tibia II, dorsal view. **138.** Anterior respiratory system and genitalia, digested, dorsal view. **139.** Anterior margin of receptaculum, dorsal view.



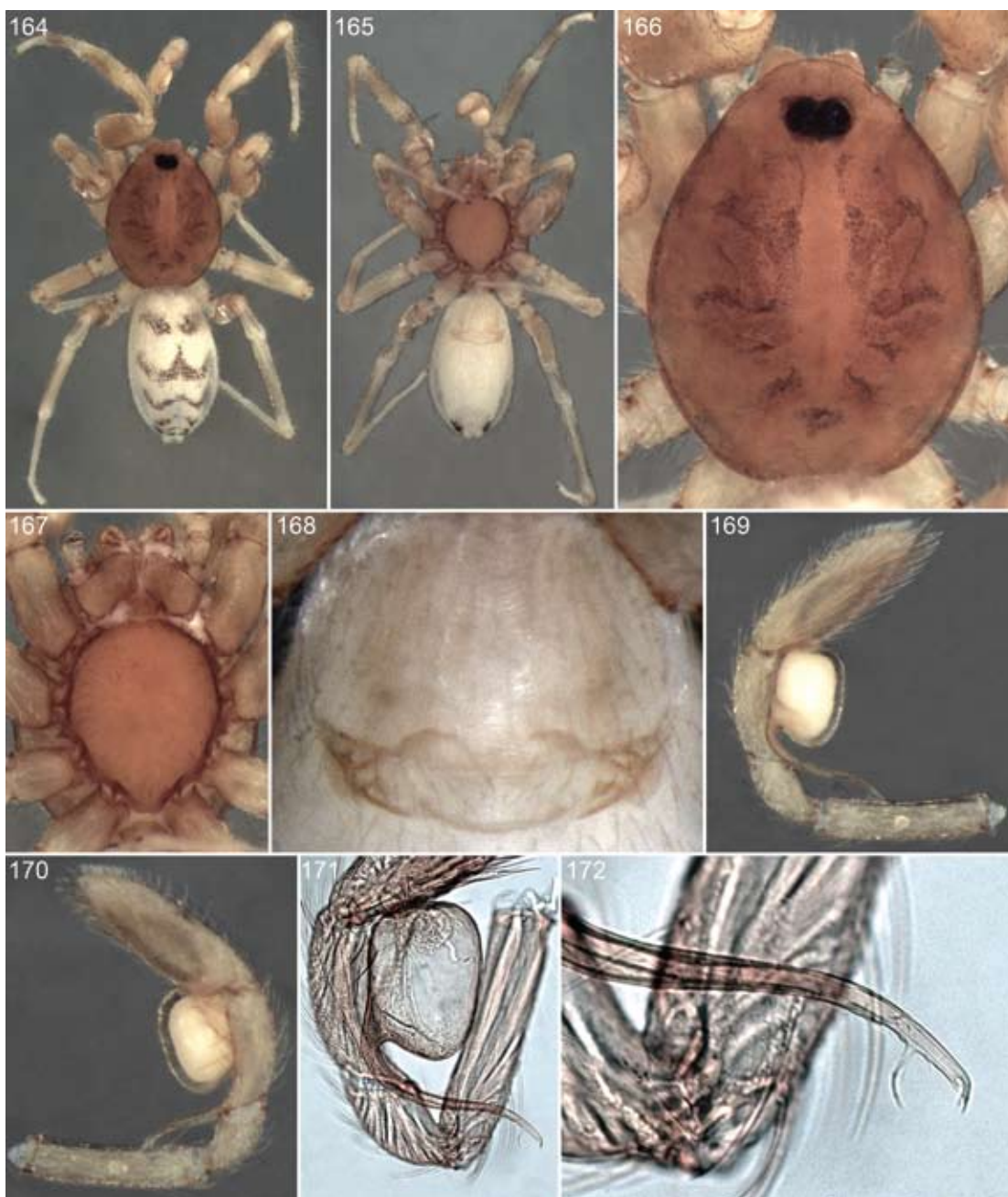
FIGS. 140–147. *Cubanops alayoni*, new species, female. **140.** Spinnerets, distal view. **141.** Anterior lateral spinneret, distal view. **142.** Posterior median spinneret, distal view. **143.** Posterior lateral spinneret, distal view. **144.** Palp, prolateral view. **145.** Same, retrolateral view. **146.** Palpal femur, prolateral view. **147.** Base of palpal femur, prolateral view, showing stridulatory pick.



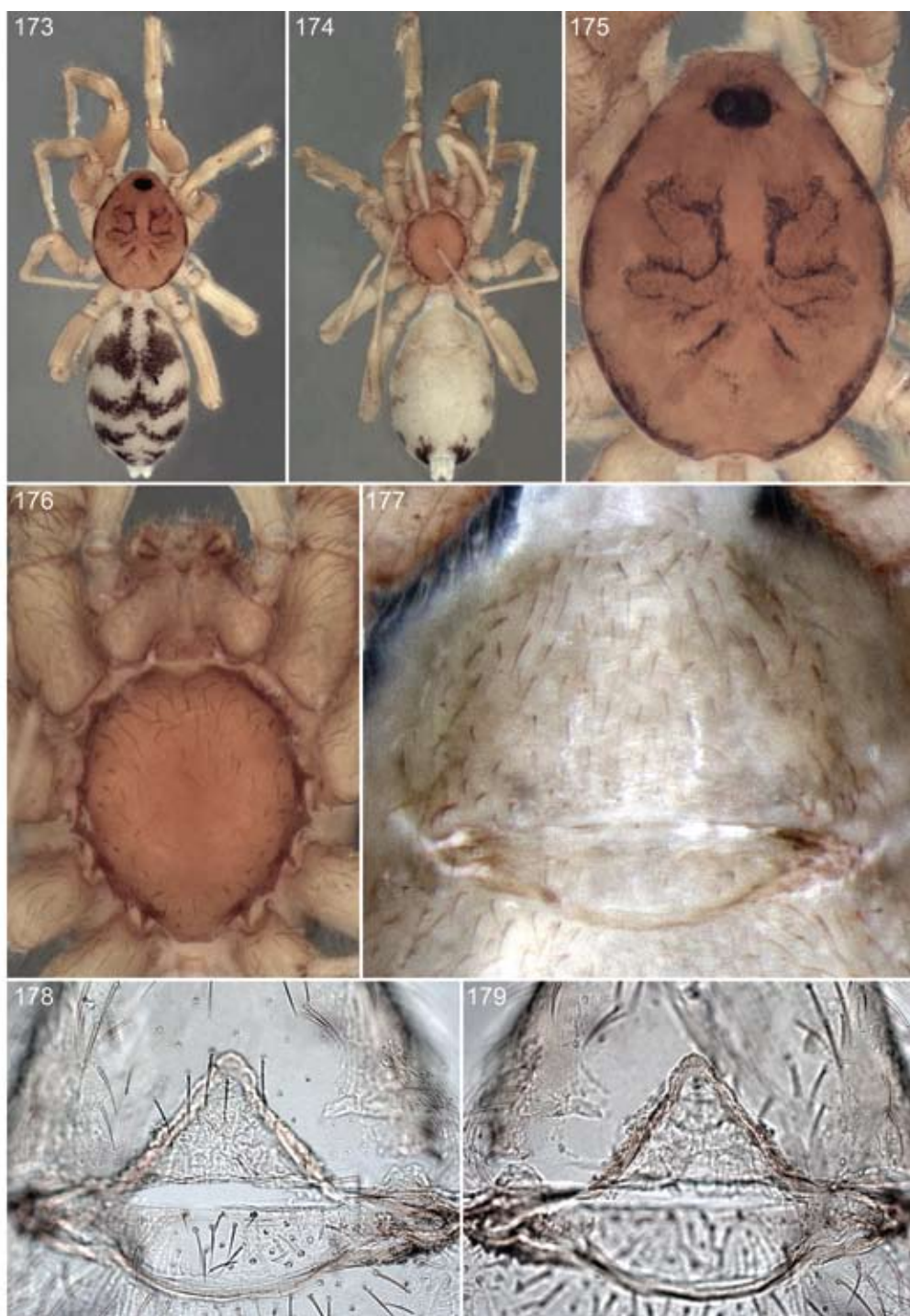
FIGS. 148–156. *Cubanops alayoni*, new species, male. 148. Habitus, dorsal view. 149. Same, ventral view. 150. Carapace, dorsal view. 151. Sternum and mouthparts, ventral view. 152. Epigastric region, ventral view. 153. Left palp, prolateral view. 154. Same, retrolateral view. 155. Bulb and embolus, prolateral view. 156. Embolus tip, prolateral view.



FIGS. 157–163. *Cubanops alayoni*, new species, female. **157.** Habitus, dorsal view. **158.** Same, ventral view. **159.** Carapace, dorsal view. **160.** Sternum and mouthparts, ventral view. **161.** Epigastric region, ventral view. **162.** Internal genitalia, ventral view. **163.** Same, dorsal view.



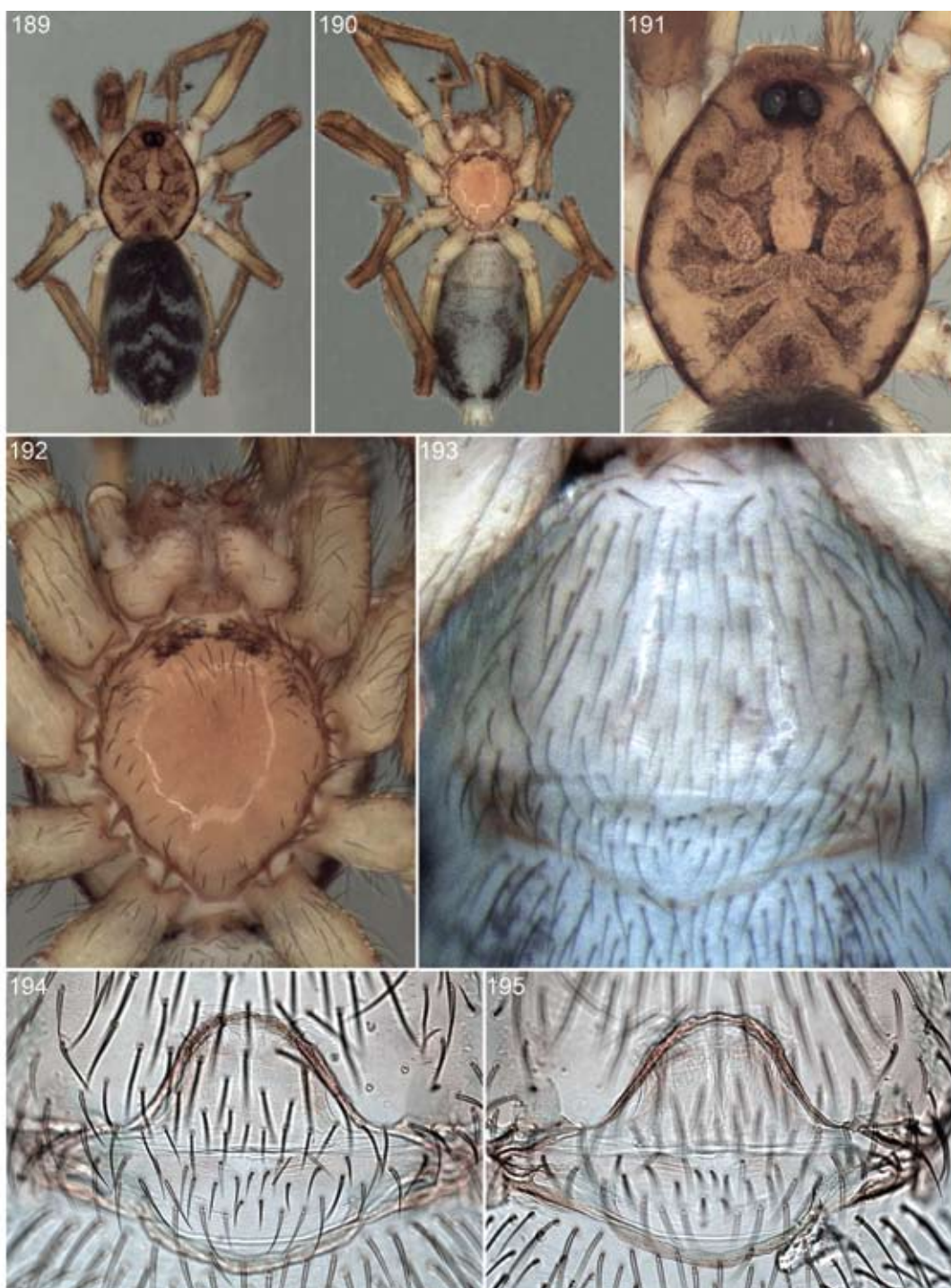
FIGS. 164–172. *Cubanops juragua*, new species, male. **164.** Habitus, dorsal view. **165.** Same, ventral view. **166.** Carapace, dorsal view. **167.** Sternum and mouthparts, ventral view. **168.** Epigastric region, ventral view. **169.** Left palp, prolateral view. **170.** Same, retrolateral view. **171.** Bulb and embolus, prolateral view. **172.** Embolus tip, prolateral view.



FIGS. 173–179. *Cubanops juragua*, new species, female. 173. Habitus, dorsal view. 174. Same, ventral view. 175. Carapace, dorsal view. 176. Sternum and mouthparts, ventral view. 177. Epigastric region, ventral view. 178. Internal genitalia, ventral view. 179. Same, dorsal view.



FIGS. 180–188. *Cubanops granpiedra*, new species, male. **180.** Habitus, dorsal view. **181.** Same, ventral view. **182.** Carapace, dorsal view. **183.** Sternum and mouthparts, ventral view. **184.** Epigastric region, ventral view. **185.** Left palp, prolateral view. **186.** Same, retrolateral view. **187.** Bulb and embolus, prolateral view. **188.** Embolus tip, prolateral view.



FIGS. 189–195. *Cubanops granpiedra*, new species, female. 189. Habitus, dorsal view. 190. Same, ventral view. 191. Carapace, dorsal view. 192. Sternum and mouthparts, ventral view. 193. Epigastric region, ventral view. 194. Internal genitalia, ventral view. 195. Same, dorsal view.

Cubanops juragua, new species

Figures 164–179

TYPE: Male holotype taken under rock at Playa Juragua, Santiago de Cuba, Cuba (Aug. 2, 1999; R. Teruel), deposited in BSC.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males resemble those of *C. alayoni* but have the subdistal process on the embolus originating at a right angle to the embolus tip, which lacks tiny subdistal prongs (figs. 171, 172); females have a distinctively shaped, distally acute receptaculum (figs. 178, 179). Males and females have not been collected together, but are here matched because of their geographic proximity and their mutual affinities to other members of the species group.

MALE: Total length 2.61 (figs. 164–172). Carapace pale yellow, with thin, purple margins separated from paramedian reticulations by distinct submarginal unmarked bands, reticulations on each side separated by median, longitudinal unmarked band extending onto anterior portion of pars thoracica. Sternum orange, without submarginal darkened spots. Abdominal dorsum with purple markings reduced to five dark chevrons. Sides of femora, tibiae, and metatarsi darkened. Embolus long, narrow, subdistal process situated far from tip, originating at right angle; embolus tip wide, without subdistal tiny prongs (figs. 171, 172).

FEMALE: Total length 3.59 (figs. 173–179). Coloration as in male except abdominal dark chevrons larger. Receptaculum forming equilateral triangle, distally acute (figs. 178, 179).

OTHER MATERIAL EXAMINED: CUBA: **Santiago de Cuba:** Ciudadamar, Mar. 2, 1999 (R. Teruel, BSC), 1 ♀; La Socapa, Aug. 23, 2001, under rock (R. Teruel, BSC), 2 ♂, Dec. 11, 2002 (R. Teruel, A. Sánchez, BSC 599), 2 ♀; Zona Morro, Nov. 26, 1976, under large rock (L. Riverón, G. Alayón, IES), 1 ♀.

DISTRIBUTION: Eastern Cuba (Santiago de Cuba province).

Cubanops granpiedra, new species

Figures 180–195

TYPES: Male holotype and female allotype taken at an elevation of 550 m at km. 7.5 on road to La Gran Piedra, Santiago de Cuba Municipality, 20°00'23"N, 75°40'31"W, Santiago de Cuba, Cuba (May 8, 2010; N. Platnick, A. Sánchez, A. Pérez, G. Alayón), deposited in BSC.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

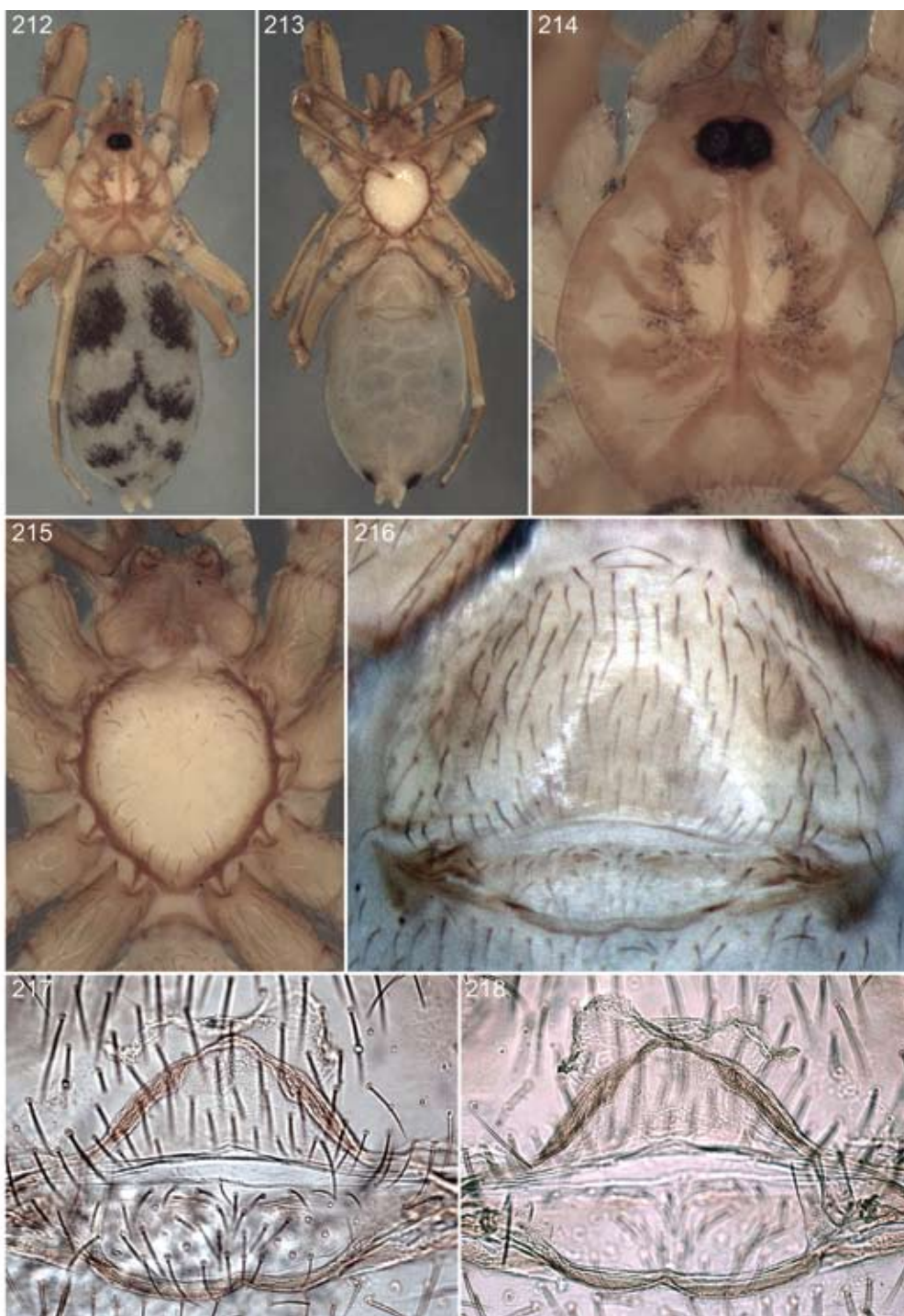
DIAGNOSIS: Males resemble those of *C. alayoni* but have a longer subdistal process that is almost as long as the embolus tip itself (figs. 187, 188); females also resemble those of *C. alayoni* but have a thinner anterior margin on the receptaculum that is weaker anteriorly than laterally (figs. 194, 195).



FIGS. 196–204. *Cubanops terueli*, new species, male. **196.** Habitus, dorsal view. **197.** Same, ventral view. **198.** Carapace, dorsal view. **199.** Sternum and mouthparts, ventral view. **200.** Epigastric region, ventral view. **201.** Left palp, prolateral view. **202.** Same, retrolateral view. **203.** Bulb and embolus, prolateral view. **204.** Embolus tip, prolateral view.



FIGS. 205–211. *Cubanops terueli*, new species, female. 205. Habitus, dorsal view. 206. Same, ventral view. 207. Carapace, dorsal view. 208. Sternum and mouthparts, ventral view. 209. Epigastric region, ventral view. 210. Internal genitalia, ventral view. 211. Same, dorsal view.



FIGS. 212–218. *Cubanops tortuguilla*, new species, female. 212. Habitus, dorsal view. 213. Same, ventral view. 214. Carapace, dorsal view. 215. Sternum and mouthparts, ventral view. 216. Epigastric region, ventral view. 217. Internal genitalia, ventral view. 218. Same, dorsal view.

MALE: Total length 2.68 (figs. 180–188). Carapace pale yellow, with dark purple margins separated from paramedian reticulations by distinct submarginal unmarked bands, reticulations on each side separated by median, longitudinal unmarked band occupying pars cephalica only. Sternum orange, with submarginal dark markings occupying anterior one-fifth of sternal surface. Abdominal dorsum almost entirely purple, with only four tiny, pale chevrons. Sides of femora, tibiae, and metatarsi darkened. Embolus long, narrow, subdistal process situated far from tip but extending almost as far distally as tip (figs. 187, 188).

FEMALE: Total length 3.16 (figs. 189–195). Coloration as in male except anterior margin of sternum with greatly darkened spots opposite endites. Receptaculum forming broad triangle, sclerotized anterior margin thinner across median third than on sides (figs. 194, 195).

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from the type locality in Santiago de Cuba province, Cuba.

Cubanops terueli, new species

Figures 196–211

TYPES: Male holotype and female allotype taken under rocks along the margins of the Río Guaurabo, Trinidad, 21°48'10"N, 80°00'42"W, Sancti Spíritus, Cuba (May 20, 2006; R. Teruel), deposited in BSC (606).

ETYMOLOGY: The specific name is a patronym in honor of Rolando Teruel, collector of the types and many other caponiids.

DIAGNOSIS: Males have a distinctively recurved subdistal process on the embolus (figs. 203, 204); females have a distinctively narrowed apex on the anterior receptaculum (figs. 210, 211).

MALE: Total length 2.72 (figs. 196–204). Carapace pale yellow with whiter areas, dark purple margins separated from paramedian reticulations by distinct submarginal unmarked bands, reticulations weak, those on each side separated by median, longitudinal unmarked band extending most of carapace length. Sternum orange, with faint dark markings opposite endites. Abdominal dorsum purple, with four white chevrons, most anterior chevron largest. Femora and tibiae darkened except around proximal and distal ends. Embolus long, narrow, subdistal process recurved, tip with four tiny prongs (figs. 203, 204).

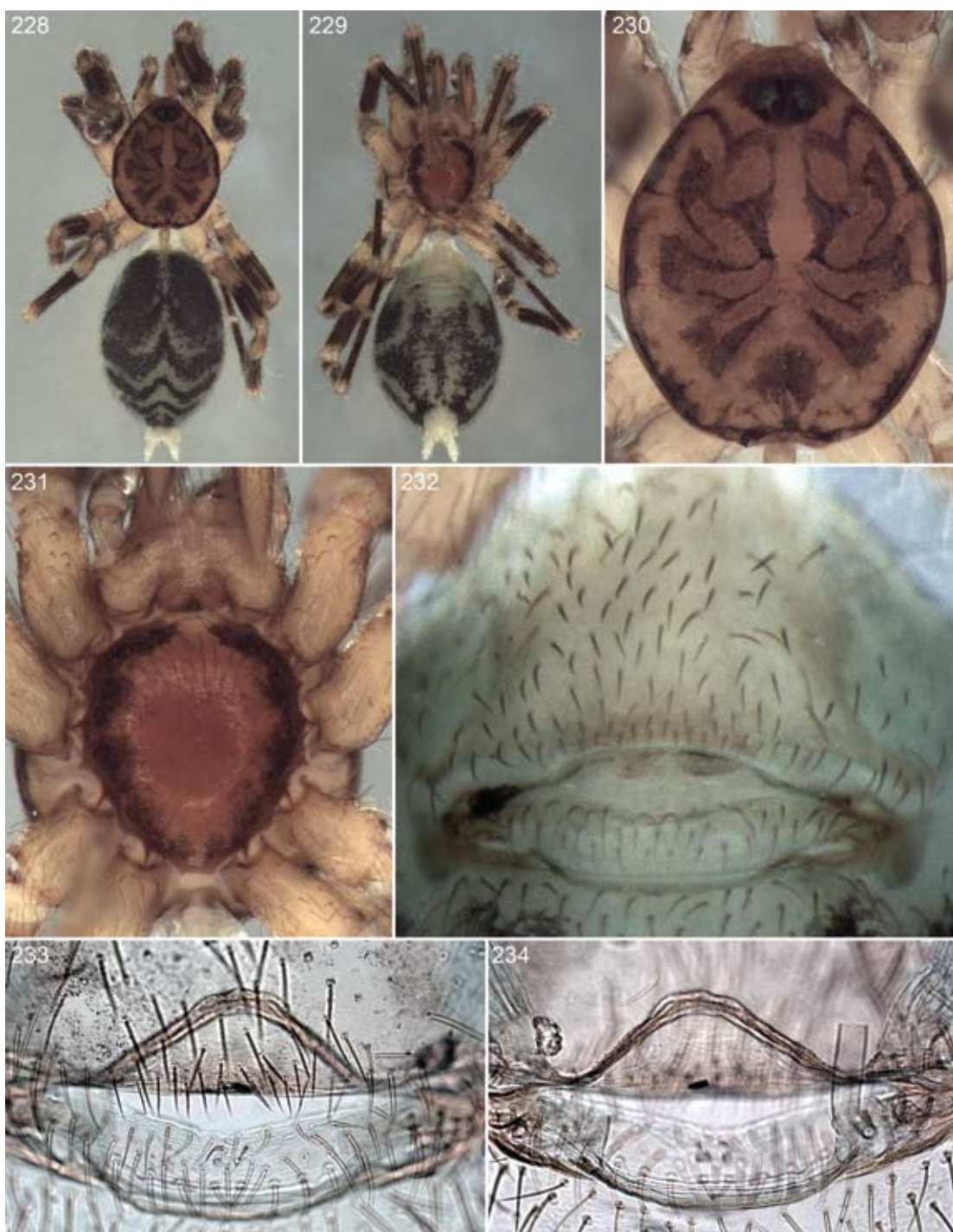
FEMALE: Total length 3.98 (figs. 205–211). Coloration as in male except abdominal dorsum with most anterior chevron only slightly larger than others. Receptaculum with abruptly narrowed tip (figs. 210, 211)

OTHER MATERIAL EXAMINED: CUBA: **Sancti Spíritus**: vicinity of Río Guaurabo, Trinidad, Nov. 20, 1976 (L. Hernández, IES), 1♂.

DISTRIBUTION: Central Cuba (Sancti Spíritus province).



FIGS. 219–227. *Cubanops vega*, new species, male. 219. Habitus, dorsal view. 220. Same, ventral view. 221. Carapace, dorsal view. 222. Sternum and mouthparts, ventral view. 223. Epigastric region, ventral view. 224. Left palp, prolateral view. 225. Same, retrolateral view. 226. Bulb and embolus, prolateral view. 227. Embolus tip, prolateral view.



FIGS. 228–234. *Cubanops vega*, new species, female. 228. Habitus, dorsal view. 229. Same, ventral view. 230. Carapace, dorsal view. 231. Sternum and mouthparts, ventral view. 232. Epigastric region, ventral view. 233. Internal genitalia, ventral view. 234. Same, dorsal view.

Cubanops tortuguilla, new species

Figures 212–218

TYPE: Female holotype taken under rock at Tortuguilla, San A. del Sur, Guantánamo, Cuba (Nov. 10, 2000; R. Teruel), deposited in BSC (593).

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be recognized by the laterally thickened anterior margin of the receptaculum, and the relatively long membranous sac anterior of that margin (figs. 217, 218).

MALE: Unknown.

FEMALE: Total length 4.14 (figs. 212–218). Carapace pale yellow with whiter areas, margins not darkened, reticulations weak, reduced to two curved, paramedian bands. Sternum orange, margins rebordered but without dark markings. Abdominal dorsum white with two pairs of anterior purple patches, posterior pair much larger than anterior, followed posteriorly by three purple chevrons. Anterior femora and tibiae slightly darkened. Sclerotized anterior margin of receptaculum with greatly thickened sides (figs. 217, 218).

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Eastern Cuba (Guantánamo province).

Cubanops vega, new species

Figures 219–234

TYPES: Male holotype taken in a flight intercept trap at an elevation of 550 m in a forest at Hotel Montaña, 10 km NE of Jarabacoa, La Vega, Dominican Republic (July 18–Aug. 4, 1995; S. and J. Peck), deposited in AMNH.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males have a distinctively long and sinuous embolus (figs. 226, 227); females have the medial, distal portion of the sclerotized anterior receptacular margin thicker than the lateral portions (figs. 233, 234); both sexes have dark markings occupying both lateral margins of the sternum (figs. 222, 231).

MALE: Total length 2.68 (figs. 219–227). Carapace dark orange, with dark purple margins separated from paramedian reticulations by narrow submarginal unmarked bands, reticulations on each side separated by median, longitudinal unmarked band occupying pars cephalica only. Sternum orange, with submarginal dark markings opposite endites and all leg coxae. Abdominal dorsum purple, with four narrow, white chevrons. Basal and distal portions of femora, and all but distal portions of tibiae and metatarsi darkened. Embolus long, sinuous, subdistal process situated far from tip (figs. 226, 227).

FEMALE: Total length 3.59 (figs. 228–234). Coloration as in male. Sclerotized anterior margin of receptaculum thicker across anteriormost third than on sides (figs. 233, 234).

OTHER MATERIAL EXAMINED: DOMINICAN REPUBLIC: **La Vega:** Raquet Club, 10 km NE Jarabacoa, July 20–Aug. 4, 1995, flight intercept trap, mixed forest, elev. 550 m (S., J. Peck, AMNH), 2♂; Raquet Club Road, 12 km NE Jarabacoa, Aug. 4, 1995, broken termite nest, elev. 550 m (S., J. Peck, AMNH), 1♀.

DISTRIBUTION: La Vega province, Dominican Republic, Hispaniola.

ACKNOWLEDGMENTS

We thank Giraldo Alayón for his help over many years, and both Abel Pérez and Giraldo Alayón for their invaluable assistance in the field. Specimens from the MCZ were kindly made available by Gonzalo Giribet and Laura Leibensperger. We are indebted to Darrell Ubick and Peter Jäger for their helpful comments on a draft of the manuscript, to Steve Thurston for composing the plates, and to the Peter J. Solomon Family Spider Research Fund for supporting our joint fieldwork in Cuba and the publication of the color images.

REFERENCES

- Alayón G., G. 1976. Nueva especie de *Nops* Mac Leay, 1839 (Araneae: Caponiidae) de Isla de Pinos, Cuba. *Poeyana* 148: 1–6.
- Alayón G., G. 1977. Descripción del macho de *Nops ludovicorum* y redescrición de la hembra de *Nops guanabacoae* (Arachnida: Araneae: Caponiidae). *Poeyana* 169: 1–8.
- Álvarez-Padilla, F., and G. Hormiga. 2008. A protocol for digesting internal soft tissues and mounting spiders for scanning electron microscopy. *Journal of Arachnology* 35: 538–542.
- Bryant, E.B. 1948. The spiders of Hispaniola. *Bulletin of the Museum of Comparative Zoology, Harvard University* 100: 331–459.
- Chamberlin, R.V. 1924. The spider fauna of the shores and islands of the Gulf of California. *Proceedings of the California Academy of Sciences* 12: 561–694.
- Chickering, A.M. 1967. The genus *Nops* (Araneae, Caponiidae) in Panama and the West Indies. *Breviora* 274: 1–19.
- Kranz-Baltensperger, Y., N.I. Platnick, and N. Dupérré. 2009. A new genus of the spider family Caponiidae (Araneae, Haplogynae) from Iran. *American Museum Novitates* 3656: 1–12.
- MacLeay, W.S. 1839. On some new forms of Arachnida. *Annals and Magazine of Natural History* 2: 1–14.
- Platnick, N.I. 1993. A new genus of the spider family Caponiidae (Araneae, Haplogynae) from California. *American Museum Novitates* 3063: 1–8.
- Platnick, N.I. 1994a. A revision of the spider genus *Caponina* (Araneae, Caponiidae). *American Museum Novitates* 3100: 1–15.

- Platnick, N.I. 1994b. A review of the Chilean spiders of the family Caponiidae (Araneae, Haplogynae). American Museum Novitates 3113: 1–10.
- Platnick, N.I. 1995. A revision of the spider genus *Orthonops* (Araneae, Caponiidae). American Museum Novitates 3150: 1–18.
- Platnick, N.I., J.A. Coddington, R.R. Forster, and C.E. Griswold. 1991. Spinneret morphology and the phylogeny of haplogyne spiders. American Museum Novitates 3016: 1–73.
- Platnick N.I., and P. Jäger. 2008. On the first Asian spiders of the family Caponiidae (Araneae, Haplogynae), with notes on the African genus *Diploglena*. American Museum Novitates 3634: 1–12.
- Platnick, N.I., and A.A. Lise. 2007. On *Nyetnops*, a new genus of the spider subfamily Nopinae (Araneae, Caponiidae) from Brazil. American Museum Novitates 3595: 1–9.
- Purcell, W.F. 1904. Descriptions of new genera and species of South African spiders. Transactions of the South African Philosophical Society 15: 115–173.
- Simon, E. 1887. Observation sur divers arachnides: synonymies et descriptions. Annales de la Société Entomologiques de France Series 6, 7 (Bull.): 158–159, 167, 175–176, 186–187, 193–195.
- Simon, E. 1891. On the spiders of the island of St. Vincent. Part 1. Proceedings of the Zoological Society of London 1891: 549–575.

Complete lists of all issues of *Novitates* and *Bulletin* are available on the web (<http://digitallibrary.amnh.org/dspace>). Inquire about ordering printed copies via e-mail from scipubs@amnh.org or via standard mail from:

American Museum of Natural History—Scientific Publications
Central Park West at 79th Street
New York, NY 10024

☞ This paper meets the requirements of ANSI/NISO Z39.48-1992 (permanence of paper).