

Review of the *Ceratocapsus* of Cuba, with Descriptions of Three New Species and a Neotype Designation for *C. cubanus* Bergroth (Heteroptera: Miridae: Orthotylinae)

LUIS M. HERNÁNDEZ^{1,2} AND THOMAS J. HENRY³

¹The Natural History Museum, Department of Entomology, Basement Floor
Cromwell Road, London SW7 5BD, U.K.

²Corresponding address: Top Floor Flat, 83 Christchurch Road, Tulse Hill, London SW2 3DH, U.K.

³Systematic Entomology Laboratory, Plant Sciences Institute, Agricultural Research Service, United States Department of Agriculture c/o National Museum of Natural History, Washington, D.C. 20560-0168, USA

ABSTRACT.—The Cuban species of *Ceratocapsus* Reuter are reviewed. Three new species (*C. alayoi*, *C. holguinensis*, and *C. stonedahlia*) are described, and a neotype is designated for *C. cubanus* Bergroth. The vesica of the male of *C. avelinae* Maldonado is illustrated for the first time, and *C. parallelus* Maldonado is considered a junior synonym of *C. punctulatus* (Reuter). Figures of male genitalia and habitus photographs are provided for selected species. A key to identify the species of *Ceratocapsus* in Cuba is given.

RESUMEN.—Se revisan las especies cubanas de *Ceratocapsus* Reuter. Se describen tres especies nuevas (*C. alayoi*, *C. holguinensis*, y *C. stonedahlia*), y se designa un neotipo para *C. cubanus* Bergroth. Se ilustra por primera vez la vesica del macho de *C. avelinae* Maldonado, y se considera *C. parallelus* como sinónimo de *C. punctulatus* (Reuter). Se muestran figuras de la genitalia del macho y se presentan vistas del cuerpo de algunas especies. Se incluye una clave para identificar las especies de *Ceratocapsus* en Cuba.

INTRODUCTION

The potentially economically important genus *Ceratocapsus* Reuter is a large New World group with more than 100 described species (Carvalho, 1958; Carvalho et al., 1983; Henry, 1985; Henry and Wheeler, 1988; Schuh, 1995). The boundaries of the genus are not well understood and the taxonomy of the species is poorly known. Henry (1979) reviewed the North American *Ceratocapsus lutescens* group and noted that at least four species groups within *Ceratocapsus* should have their own generic status. In the Neotropics, Carvalho et al. (1983) described 45 new species and maintained the separation of the tribe Ceratocapsini from the broadly defined Orthotylini.

The Ceratocapsini was established by Van Duzee (1916) and was recognized by Knight (1923, 1941), Blatchley (1926), Henry and Wheeler (1988), and Carvalho and Costa (1997). The characters that distin-

guish this tribe from other Orthotylinae are poorly defined, and although Schuh (1995) did not recognize this tribe, Carvalho et al. (1983) strongly supported Knight's (1923) separation of Ceratocapsini from Orthotylini. Presently, Ceratocapsini can be distinguished by the following combinations of characters: species sometimes slender but if so hemelytron not medially coarctate; head not unusually broad; eyes not pedunculate; thorax not distinctly campanulate, with apex of pronotum wider than vertex; abdomen broad basally; females frequently brachypterous but abdomen not narrowed at base.

Carvalho et al. (1983) distinguished *Ceratocapsus* from other Ceratocapsini by the vertical head in relation to the pronotum, with a straight carinate basal margin contiguous with the anterior part of the pronotum; equally thickened antennal segments II, III and IV; trapeziform pronotum with rounded lateral and posterior margins;

structure of male genitalia, especially the large and open male genital cavity and complex form of the parameres; and by the convergent parempodia.

The habits of *Ceratocapsus* species are not well known. Although many species are host-plant specific, there is evidence that others are predators. Wheeler (1978) documented that *C. modestus* (Uhler) preyed on the eggs of grape phylloxera, *Daktulosphaira vitifoliae* (Fitch). Carvalho et al. (1983) reported that one specimen of *C. dispersus* Carvalho and Fontes was labeled "predaceous on *Heliothis virescens* (F.)". Henry (in Carvalho et al., 1983) noted that immatures of nearly all eastern U. S. species require animal food to complete development in the laboratory.

Few species of *Ceratocapsus* have been reported from the Antilles. Uhler (1887, 1894) recorded *C. modestus* (Uhler) from Grenada, a record later considered a misidentification by Wheeler and Henry (1975) and Henry (1979). Uhler (1893) described *C. minutus* from St. Vincent. Reuter (1907) described *Ceratocapsus nigropiceus* and *C. consimilis* from Jamaica, species further discussed by Van Duzee (1907), who also reported *C. punctulatus* (Reuter) from this island. Blatchley (1926) recorded three species, *C. minutus* (Uhler), *C. modestus* (Uhler), and *C. punctulatus* (Reuter) from the West Indies. Henry and Wheeler (1982) reported *C. nigropiceus* from Florida, giving its diagnostic characters and host plants. Carvalho (1990) provided dorsal habitus illustrations for *C. nigropiceus* Reuter and *C. consimilis* Reuter.

From Cuba, Reuter (1876:87) described *Ceratocapsus punctulatus*, but with the transfer of *Trichia punctulatus* Reuter (1876:82) into *Ceratocapsus* (Reuter 1908), the name *C. punctulatus* became a secondary junior homonym (by page priority), for which Bergroth (1910) proposed the replacement name *C. cubanus*. Alayo (1974) illustrated the brachypterous female of *C. punctulatus* (Reuter) and listed *Phaseolus vulgaris* L. (Fabaceae) as a host, but did not mention *C. cubanus* Bergroth. Maldonado (1986) described two new species and gave a key to distinguish *Ceratocapsus* from related genera. In his key, Maldonado divided *Cerato-*

capsus into two groups based on body form and structure of male parameres, and stated that further study was needed before assigning them to a formal rank. In this paper we review the status of *Ceratocapsus* in Cuba and describe three new species.

All measurements were made with an ocular micrometer and are given in millimeters. Illustrations were made using a Wild M20 compound microscope and camera lucida. Dissections of the male genitalia were performed following the technique of Kelton (1959). Genitalia were positioned in glycerine jelly for illustration and transferred to microvials for permanent storage.

Voucher specimens are deposited in the collections of Instituto de Ecología y Sistemática, Ciudad Habana, Cuba (IES); Colección Horacio Grillo, Universidad Central de Las Villas, Villa Clara, Cuba (HG); The Natural History Museum, London, UK (BMNH); Moravavske Museum, Brno, Czech Republic (MM); and National Museum of Natural History, Washington, D.C., USA (NMNH).

Key to Species of Cuban *Ceratocapsus*

1. Pronotum distinctly punctured (Figs. 5-7); male parameres simple (Figs. 16, 17, 30, 31, 34, 35), with long dorsal setae; left paramere often elongate and not bifurcate, right paramere without serrate prongs -- 2
- Pronotum indistinctly punctured or smooth (Figs. 1-4); male parameres complex (Figs. 8, 9, 11, 12, 19-22, 24-26), with or without long dorsal setae; left paramere often bifurcate or elongate, right paramere with distinct serrate prongs----- 4
2. Vertex and frons with densely distributed brown punctures, especially near basal margin of head; antennal segments uniformly yellow; male genitalia as in figs. 34-36 ----- *stonedahl*, sp. n.
- Vertex and frons without brown punctures; antennal segments yellowish, sometimes with segments

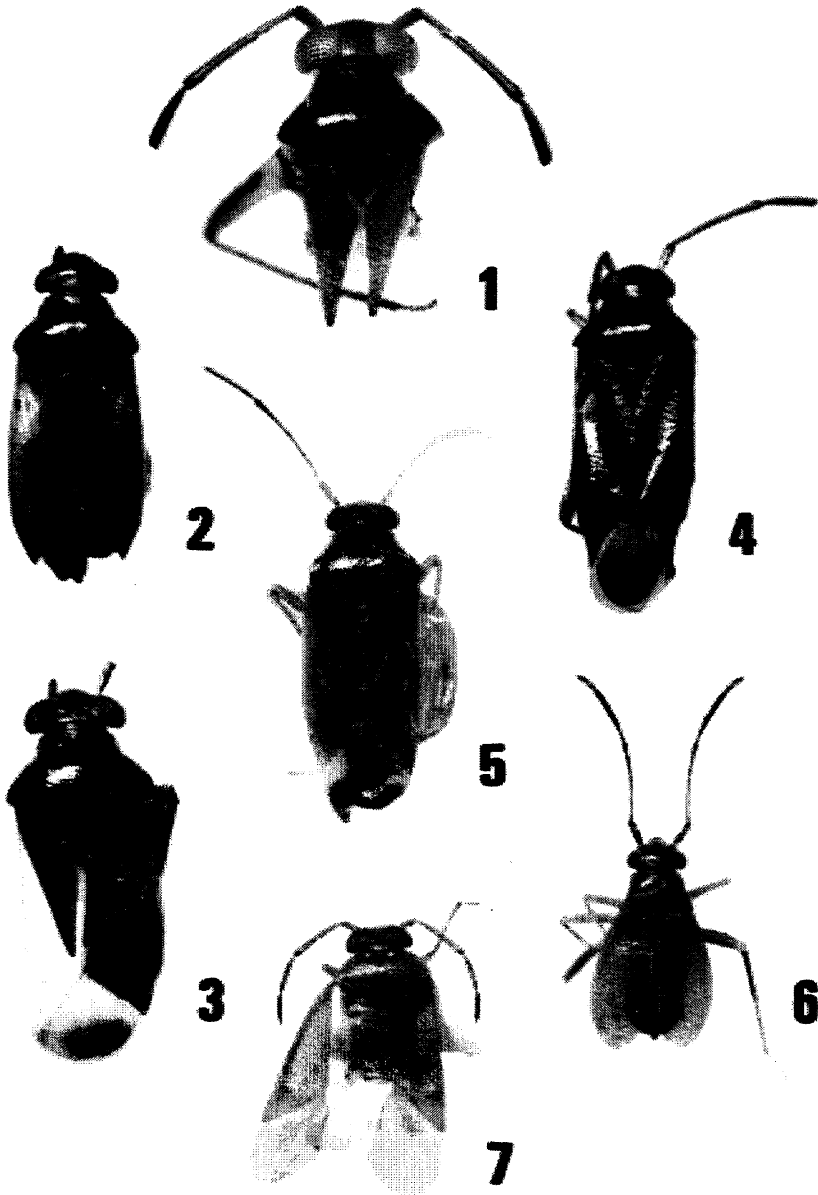


FIG. 1-7. Dorsal habitus of *Ceratocapsus* species. 1. *C. alayoi* (male holotype). 2. *C. alayoi* (female paratype). 3. *C. cubanus*. 4. *C. holguinensis*. 5. *C. punctulatus*, macropterous female. 6. *C. punctulatus*, female brachypterous. 7. *C. stonedahli*.

III and IV brown; male genitalia as
in figs. 16-18, 30-33 ----- 3
3. General coloration dark brown;
hemelytron dark brown with darker

cuneus and whitish embolium; left
paramere curved and weakly blunt
apically (Fig. 16); right paramere
(Fig. 17) with two projections at

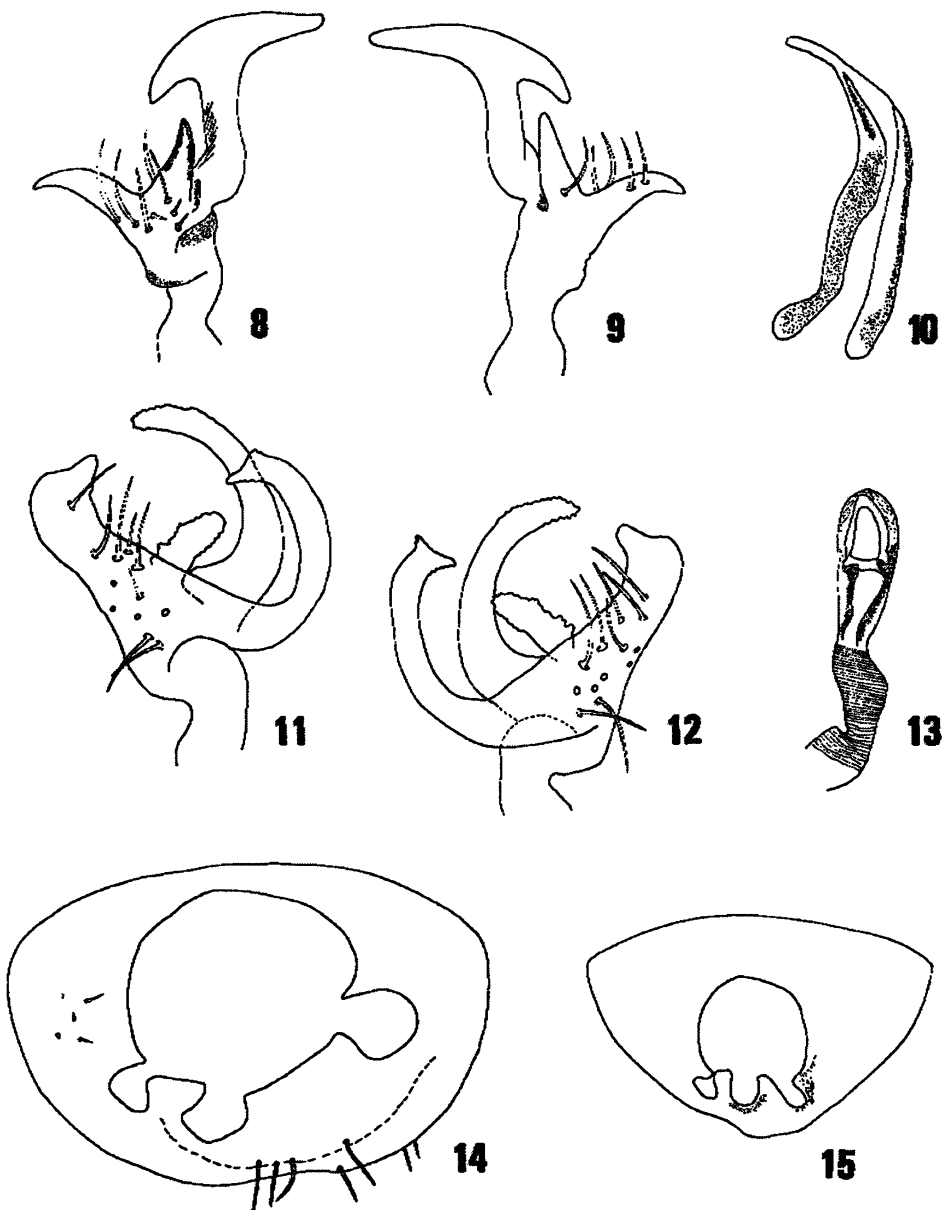


FIG. 8-15. Male genitalia of *Ceratopsus* species. 8-14. *C. alayoi*. 8. Left paramere, lateral aspect. 9. Left paramere, lateral aspect rotated 180. 10. Phallosome. 11. Right paramere, lateral aspect. 12. Right paramere, lateral aspect rotated 180. 13. Vesica. 14. Pygophore. 15. *C. avelinae*. Pygophore.

each angle, set with three long setae in dorsal view; vesica (Fig. 18) without sclerotized process; female macropterous ----- *avelinae* Maldonado

— General coloration brownish yellow, tinged with pale red; hemelytron yellow with cuneus often reddish and embolium yellow; left

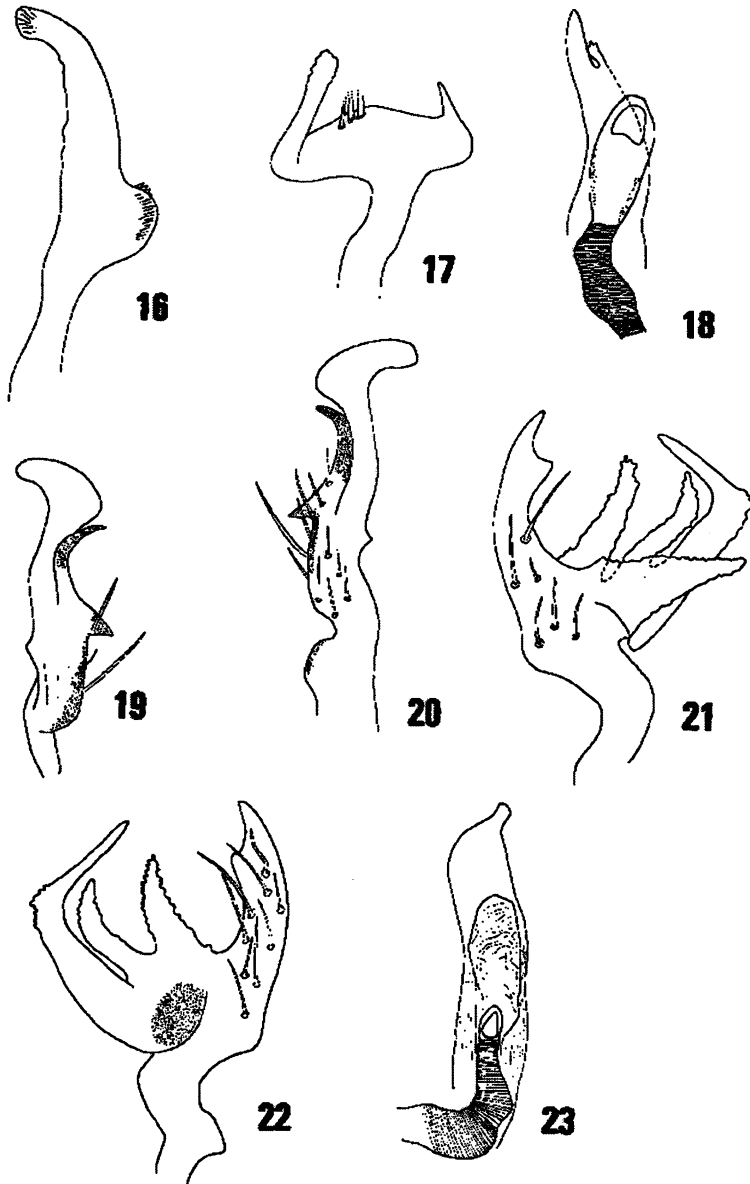


FIG. 16-23. Male genitalia of *Ceratocapsus* species. 16-18. *C. avelinae*. 16. Left paramere, lateral aspect. 17. Right paramere, lateral aspect. 18. Vesica. 19-23. *C. cubanus*. 19. Left paramere, lateral aspect. 20. Left paramere, lateral aspect, rotated 180. 21. Right paramere, lateral aspect. 22. Right paramere, lateral, rotated 180. 23. Vesica.

paramere (Fig. 30) slender, pointed apically; right paramere (Fig. 31) with one projection at right angle; vesica (Fig. 33) with two sclerotized

processes; female often brachypterous (Fig. 6) ----- *punctulatus* (Reuter)
4. Pronotum dark brown; left paramere (Figs. 24, 25) bifurcate, right

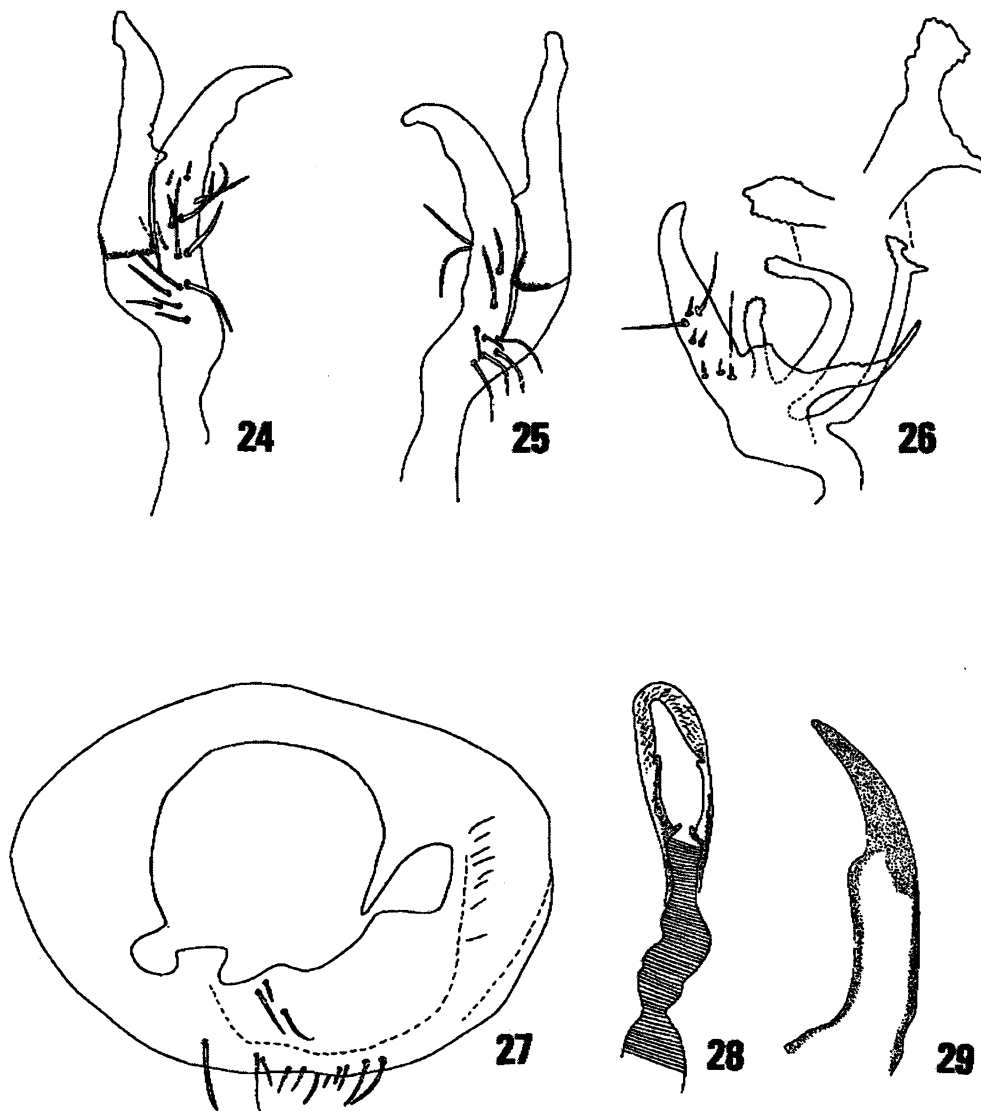


FIG. 24-29. Male genitalia of *Ceratocapsus* species. 24-29. *C. holguinensis*. 24. Left paramere, lateral aspect. 25. Left paramere, lateral aspect rotated 180°. 26. Right paramere, lateral aspect. 27. Pygophore. 28. Vesica. 29. Phallosome.

- branch with a prominent tooth near middle; right paramere with mesal prong distinctly curved (Fig. 26) --- *holguinensis*, sp. n.
- Pronotum brownish yellow, sometimes suffused with fuscous on posterior lobe; left paramere bifid or elongate, without a tooth near middle; right paramere not as above ----- 5
5. Hemelytron brown, slightly fuscous to apex of costal margin; cuneus fuscous; basal half and areoles of membrane whitish, apex dark

- brown or fuscous (Fig. 3); left paramere (Figs. 19, 20) with a subapical C-shaped process, and a prominent subapical tooth; right paramere (Figs. 21, 22) with left branch curved inward, without serrations at the apex, mesal and right prongs serrate to apex, main trunk with two prominent subapical teeth ----- *cubanus* Bergroth
- Hemelytron yellowish basally, dark brown to apex of costal margin, cuneus dark brown; membrane uniformly translucent grey or brown (Fig. 2); left paramere (Figs. 8, 9) distinctly bifid with main trunk hammer-shaped apically; right paramere (Figs. 11, 12) with two long curved prongs, the left one apically truncate, and main trunk with an additional, short, serrate prong arising dorsomesally ----- *alayoi*, sp. n.

Ceratocapsus alayoi Hernández and Henry
sp. n. (Figs. 1-2, 8-14)

Diagnosis.—Similar to *C. holguinensis* in external appearance but differs by the brownish yellow coloration on the pronotum; reddish tinge on vertex; and structure of male genitalia, especially the left paramere (Figs. 8, 9), which is distinctly bifid with the main trunk hammer-shaped apically, and the right paramere (Figs. 11, 12) with two long curved prongs, the left one truncate apically, and an additional, short, serrate prong arising dorsomesally from the main trunk.

Description.—*Female.* Macropterous. Total length 2.85. General coloration brownish yellow with dark brown areas on posterior margin of pronotum and hemelytron; body covered with erect brown setae intermixed with sericeous scale-like setae, especially on scutellum and hemelytron. *Head:* Length 0.60; width across eye 0.75; width of vertex 0.30; castaneous, smooth; width of head across eye equal to head length plus width of vertex; width of vertex as long as antennal segment I; tylus weakly produced; eyes prominent, occupying entire height of head

in lateral view. *Labium:* Extending to metacoxa, segments I and II red, segments III and IV, brown. *Antenna:* Antennal socket separated from margin of eye; segment I, length 0.30, yellow, with a red dash basally; remaining segments missing. *Thorax:* Pronotum. Mesal length 0.60; posterior width 0.60; smooth, shining, brown anteriorly and deep brown to lateral angles; calli obsolete. Scutellum yellowish, weakly punctate. *Hemelytron:* Emboliar margins parallel-sided; punctured; basal half of corium yellow, clavus and remainder of corium brown; claval commissure brown; cuneus dark brown; membrane dark translucent grey or brown. *Venter:* Mesosternum reddish brown; abdominal segments reddish brown mesally, brown laterally; metathoracic scent efferent system pale. *Legs:* Linear; yellow, procoxa reddish brown; hind leg with short erect yellow setae.

Male (abdomen and wings detached).—Similar to female in color and general appearance but without red tinge on antennal segment I. Total length ca. 3.30. *Head:* Length 0.52; width across eyes 0.82; width of vertex 0.22. *Antenna:* I, length 0.30, yellowish; II, length 1.05, pale brown; III, length 0.45, pale brown; IV missing; all segments covered with short erect yellow pubescence. *Thorax:* Mesal length of pronotum, 0.73; width of pronotum 1.06. *Genitalia:* Left paramere (Figs. 8, 9), right paramere (Figs. 11, 12), phallosome (Fig. 10), vesica (Fig. 13), and pygophore (Fig. 14).

Etymology.—Named in honor of Cuban entomologist Pastor Alayo.

Material examined.—HOLOTYPE, MALE. CUBA. Prov. Guantánamo, Tortuguilla, VIII.1975, L.B.Zayas (IES). PARATYPE: 1 female, same data as for holotype (IES).

Remarks.—*Ceratocapsus alayoi* belongs to *Ceratocapsus* group I (Blatchley, 1926) based on the indistinctly punctured pronotum, and to *Ceratocapsus* group II (Maldonado, 1986) based on the complex structure of the parameres. Although this species is described from a single male and female, it is easily distinguished from other species of *Ceratocapsus* in Cuba by the characters given in the preceding key and diagnosis, especially the structure of male the genitalia.

Ceratopsus avelinae Maldonado
(Figs. 15-18)

Ceratopsus avelinae Maldonado, 1986: 129; Schuh, 1995:90.

Diagnosis.—Distinguished from other species of *Ceratopsus* by the dark-brown coloration; head slightly paler than pronotum and slightly darker than the antennal segments; antennal segments I and II brownish yellow, with the apex of segments II, III, and IV darker; hemelytron dark brown with darker cuneus and whitish embolium; and structure of the male genitalia, especially the elongate left paramere (Fig. 16), with the sensory lobe expanded basally and small teeth on the ventral margin, and the truncate right paramere (Fig. 17), with a long projection at each angle.

Redescription.—Male (n = 2). Macropterous. Total length (tylus to apex of cuneus) 2.13-2.55; general coloration dark brown; dorsal vestiture short, erect, simple, especially on pronotum and cuneus; body strongly punctured dorsally. **Head:** Length 0.36; width across eye 0.60; width of vertex 0.19; head nearly as long as width of vertex; vertex weakly punctured; frons rugose; eye prominent, blackish, occupying entire height of head in lateral view. **Labium:** Brownish yellow, extending to metacoxa. **Antenna:** Linear; segment I, length 0.30, yellow; II, length 0.90-0.75, yellowish basally and dark brown toward apex; III and IV, brown; length of segment III 0.45-0.60, length of IV (n = 1), 0.45. **Thorax:** Pronotum: Mesal length 0.60; posterior width 0.45; dark brown, strongly punctured. Scutellum dark brown, punctured. **Hemelytron:** Emboliar margins parallel-sided; punctured; dark brown especially on clavus and cuneus; embolium whitish; membrane brownish. **Venter:** Dark brown; metathoracic efferent system pale yellow. **Legs:** Linear; uniformly brownish yellow. **Genitalia:** Left paramere (Fig. 16), right paramere (Fig. 17), vesica (Fig. 18), and pygophore (Fig. 15).

Female (After Maldonado, 1986).—Similar to male in general structure and coloration, except antennal segment IV darker than remaining segments; total length 2.70.

Material examined.—HOLOTYPE, MALE. CUBA. Prov. Matanzas, Varadero, 150 m, 11.4.1966, lgt. F. Gregor (6c) (MM). PARATYPES: 1 female (allotype), same data as for holotype (MM); 1 male (membrane partially damaged by psocids), Prov. Habana, Suraco, 30.IV.1966, 150 m, Jar Prokop (NMNH); 1 male, Prov. Habana, Habana-Alamar-Cojimar, 2-10 m, 26-31.VII.1966, Jar Prokop (NMNH).

Remarks.—*Ceratopsus avelinae* is similar to *C. grazie* Carvalho and Fons and *C. surinamensis* Carvalho and Fons (Carvalho et al., 1983) in the overall uniformly brownish color, the lack of punctures on the head, and the almost glabrous body, and to *C. punctulatus* (Reuter) in the elongate, punctured body. It is easily distinguished from these species by the structure of male genitalia. It belongs to *Ceratopsus* group II (Blatchley, 1926) based on the distinctly punctured pronotum, and to *Ceratopsus* group I (Maldonado, 1986) based on the simple right paramere.

Ceratopsus cubanus Bergroth
(Figs. 3, 19-23)

Ceratopsus punctulatus Reuter, 1876: 87; Atkinson, 1890: 141. Preoccupied by *Trichia punctulatus* Reuter, 1876: 82.

Ceratopsus cubanus Bergroth, 1910: 68; Carvalho, 1958: 45; Maldonado, 1986: 129; Schuh 1995: 91. New name for *Ceratopsus punctulatus* Reuter, 1876.

Diagnosis.—Distinguished by the structure of the male genitalia, especially the elongate left paramere (Fig. 19, 20) with a subapical C-shaped process bearing a prominent tooth sub-basally, and the three-pronged right paramere (Fig. 21, 22), with the left branch curved inward and without serrations at the apex, the mesal and right prongs serrate to apex, and the main trunk with a prominent subapical tooth.

Description.—Male homotype. Macropterous. Total length 3.15; general coloration brown with a fuscous tinge on the pronotum, cuneus, apex of corium, and legs; dorsal vestiture semierect, yellow, intermixed with decumbent sericeous setae, especially on pronotum, scutellum, and hemelytron. **Head:** Length 0.60; width 0.75; width across

eyes 0.30; width of vertex 0.20; smooth, brown, with reddish tinge on vertex and frons; maxillar plates reddish, mandibular plates yellow; frons and tylus with erect yellow setae; eyes prominent, black. *Labium*: Extending to abdominal segment III, segments I and II distinctly fuscous, segments III and IV brown. *Antenna*: Linear; antennal socket touching anterior margin of eye; segment I, length 0.28, brown, with a red dash basally; II and III missing; IV (glued to point), length 0.45, brown. *Thorax*: Pronotum: Mesal length, 0.73; posterior width 1.11; smooth, brown, weakly fuscous on posterior lobe; calli obsolete. Scutellum weakly punctured, brown, becoming yellow toward apex. *Hemelytron*: Emboliar margins parallel-sided; brown, distinctly punctate; apex of corium toward cuneal fracture and cuneus distinctly fuscous; membrane cells white, remainder of membrane brown. *Venter*: Brown, ostiolar peritreme pale yellow. *Legs*: Brown, suffused with fuscous, especially on procoxa. *Genitalia*: Left paramere (Figs. 19, 20), right paramere (Figs. 21, 22), phallosome and vesica (Fig. 23).

Female.—Unknown.

Remarks.—Maldonado (1986) mentioned that Reuter's short description of *C. cubanus* indicated an oval body, apically pink antennal segments, and a whitish membrane, but noted that none of the specimens he had fit these characters. We have searched for the original type of *C. punctulatus* in the Helsinki collection without success, even though the type of *Trichia punctulatus* is present there.

With a more complete translation of Reuter's (1876) original description, we are confident that the single specimen we have from Pinar del Rio Province, Cuba, represents the species now named *C. cubanus*. The following is a translation of Reuter's Latin description: Dusky reddish yellow; pronotal disc and posterior area of hemelytron most finely and densely punctate; scutellum finely and densely punctate; pronotal disc and apical half of hemelytron dark blackish red; membrane with apical half fuscous; last two antennal segments reddish brown, apex of second segment thicker, second segment 3 times longer than

first segment, third segment 2 times shorter than second (half as long), third segment oblong, clavate toward apex, fourth segment slightly shorter than third segment, fusiform; pronotum laterally situate; venter fuscous. Length 3 mm.

Ceratocapsus cubanus runs to *C. alverengai* Henry (Carvalho et al., 1983) based on the finely punctate (appearing nearly impunctate) pronotum, the brown to fuscous antennal segments II-IV, hemelytron with distinct brown-stained, setigerous punctures, and the pale or whitish membrane with the apical half darkened, but it is easily distinguished by the structure of male genitalia. It belongs to *Ceratocapsus* group I (Blatchley, 1926) based on the indistinctly punctured pronotum, and to *Ceratocapsus* group II (Maldonado, 1986) based on the complex shape of the parameres.

Type designation.—To ensure stability, the following specimen is here designated as the NEOTYPE of *C. punctulatus* Reuter, 1876: 87: Label 1, "Pinares de Viñales, Pinar del Rio, IX-1966, CUBA, P. Alayo"; 2, "23 Dibujo"; 3, "right paramere lost, but drawn, L. M. Hdez 1995"; 4 (red label, here added): "Neotype male: *Ceratocapsus punctulatus* Reuter, desig. by L.M. Hernández and T. J. Henry" (IES).

Ceratocapsus holguinensis Hernández and Henry sp. n. (Figs. 4, 24-29)

Diagnosis.—Distinguished by the structure of the male genitalia, especially the distinctly bifurcate left paramere (Figs. 24, 25), with the right branch having a prominent subapical tooth, and the right paramere (Fig. 26) with three apically serrate prongs, the mesal prong distinctly curved.

Description.—*Male* (n = 6). Macropterous. Total length 2.85-3.45; general coloration brown; dorsal vestiture long, erect, and brown, intermixed with recumbent sericeous setae, especially on pronotum, scutellum, and hemelytron. *Head*: Length 0.48, width across eyes 0.60-0.75; width of vertex 0.30; brown, slightly rugose, set with long erect brown setae; vertex 1.66 times wider than width of eyes in dorsal view; tylus weakly produced; eyes reddish black, prominent, occupying entire height of head

in lateral view. *Labium*: Extending between abdominal segments III-IV, segments I and II brown, III and IV dark brown. *Antenna*: Linear; antennal socket touching anterior margin of eye; segment I, length 0.30, as long as width of vertex; II, length 0.90-1.05; III, length 0.45-0.54, subequal to IV; IV, length 0.45, fusiform; all segments uniformly brown, clothed with short semierect yellow pubescence. *Thorax*: Pronotum: Mesal length 0.30-0.31; posterior width 1.05-1.08; smooth, dark brown, sometimes pale brown on anterior margin; posterior lobe slightly elevated; calli weakly defined. Scutellum dark brown basally, pale yellow to apex, weakly punctured. *Hemelytron*: Emboliar margins parallel-sided; punctured; half of corium and clavus brownish yellow, remainder of hemelytron dark brown; cuneus dark brown; membrane cells white, membrane brown toward apex. *Venter*: Propleura and abdominal segments deep brown; scent gland efferent system pale. *Legs*: Uniformly brown. *Genitalia*: Left paramere (Figs. 24, 25); right paramere (Fig. 26), pygophore (Fig. 27), vesica (Fig. 28), and phallosome (Fig. 29).

Female.—Unknown.

Etymology.—Named for its occurrence in Holguín Province, Cuba.

Material examined.—HOLOTYPE, MALE. CUBA. Holguín Province, Mayari, Loma de La Bandera, 2.VII.1990, L.F. Armas-V. Becker, charrascal, a la luz, 350 m (IES). PARATYPES: 3 males, same data as for holotype (IES; BMNH; NMNH); 3 males, same locality and collectors as for holotype, 13.VI.1990, charrascal, 400 m (IES; BMNH; NMNH).

Additional material examined.—1 male, Cayo Sabina, Prov. Holguín, Pinares de Mayari, 9.VII.1990, L.F. Armas; 2 males, same locality and date as for holotype, L. F. Armas (all IES).

Remarks.—*Ceratopsus holguinensis* is similar to *C. guanabarinus* Carvalho and Fontes (Carvalho et al., 1983) in having setigerous punctures on the hemelytron and by the short second antennal segment that is equal to or shorter than the basal width of the pronotum, but it is distinguished by the structure of male genitalia. It belongs to *Ceratopsus* group I (Blatchley, 1926) based

on the indistinctly punctured pronotum, and to *Ceratopsus* group II (Maldonado, 1986) based on the complex parameres.

Ceratopsus punctulatus (Reuter) (Figs. 5, 6, 30-32)

Trichia punctulatus Reuter, 1876:87.

Tirys punctulatus: Kirkaldy, 1903; Van Duzee, 1916: 44; 1917:38.

Ceratopsus punctulatus: Carvalho, 1958: 48; Blatchley, 1926:826; Alayo, 1974: 15; Henry and Wheeler, 1988:397; Schuh, 1995:96.

Ceratopsus parallelus Maldonado, 1986: 129. New Synonymy.

Diagnosis.—Distinguished from other *Ceratopsus* in Cuba by the parallel-sided body, pale yellow general coloration, with brownish areas on the scutellum and apex of the corium; yellow antennal segments I and II, with the apex of segments II, III, and IV brown; cuneus often reddish; area posterior to areolas white, remainder of membrane black; abdominal segments reddish; coxae pale yellow, remainder of legs yellowish, sometimes metafemur dark brown, suffused with fuscous; and structure of male genitalia (Figs. 29-32), especially the elongate left paramere (Fig. 30), with distinct teeth and long setae dorsally, right paramere (Fig. 31), pygophore (Fig. 32), and vesica (Fig. 33), with two distinct sclerotized processes. Total length of male ($n = 5$) 2.29-2.72.

Macropterous females are similar to males in structure and general coloration (Fig. 5). Total length ($n = 4$) 2.48-2.66.

Brachypterous females are coleopteriform and lack a membrane on the hemelytron (Fig. 6). The head, posterior half of pronotum, and scutellum are pale brown, with remainder of body brownish yellow dorsally and distinctly reddish ventrally. Labial segments I and II are reddish; segments III and IV are yellowish; and segment IV is dark brown apically. The scutellum mesally and the hemelytron basally are depressed. Legs uniformly yellow with coxae reddish basally. Total length ($n = 3$) 1.98-2.35.

Types examined.—*Ceratopsus parallelus*: HOLOTYPE, MALE. CUBA. Prov. Habana,

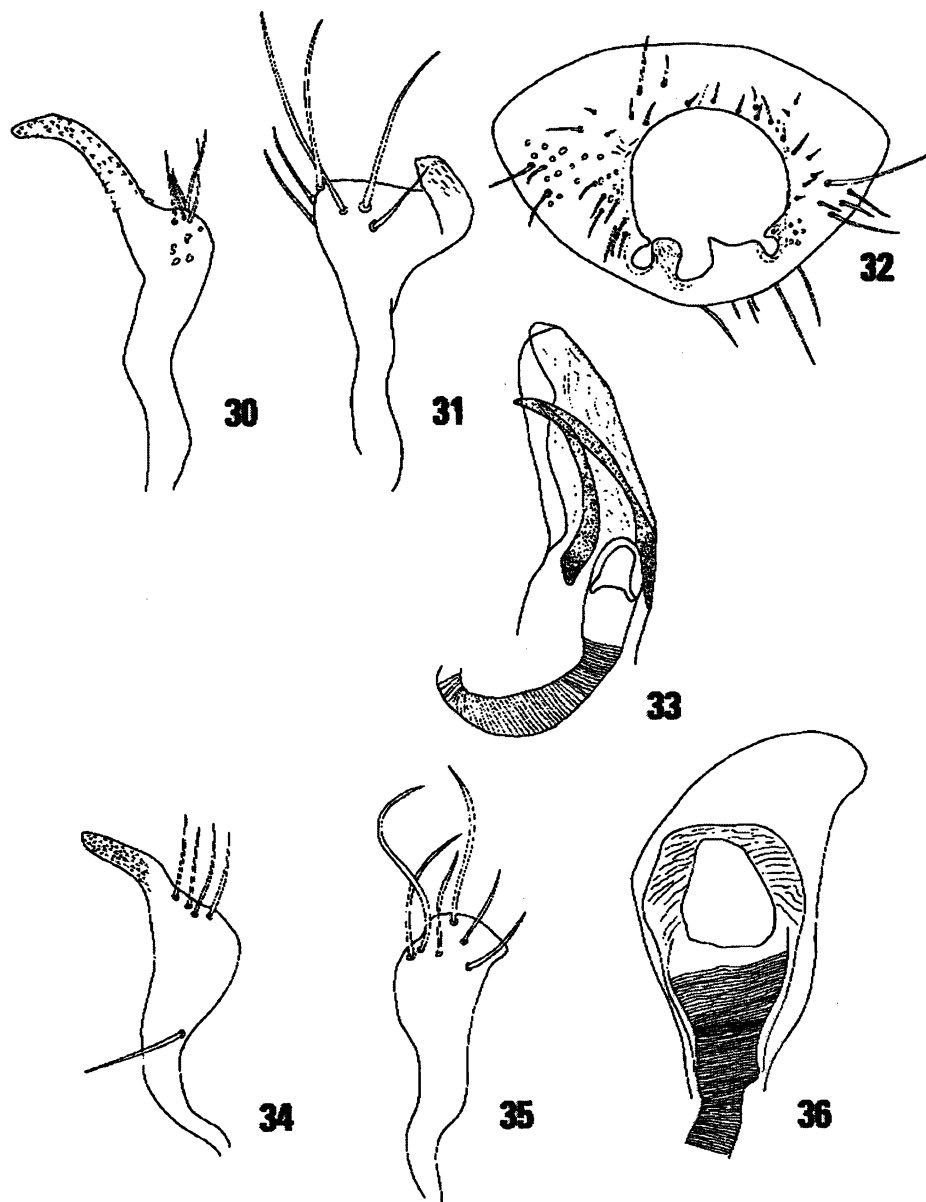


FIG. 30-36. Genitalia of *Ceratocapsus* species. 30-33. *C. punctulatus*. 30. Left paramere, lateral aspect. 31. Right paramere, lateral aspect. 32. Pygophore. 33. Vesica. 34-36. *C. stonedahli*. 34. Left paramere, lateral aspect. 35. Right paramere, lateral aspect. 36. Vesica.

Habana-Alamar-Cojimar, 2-10 m, 25-31.7.1966, leg. Jar. Prokop [with an extra det. label: "Holotype *Henrycapsus* [*nomen nudum*] *parallelus* Maldonado"]; [red label

here added] "Holotype male: *Ceratocapsus parallelus* Maldonado" (MM). PARATYPES: 1 female (allotype), Prov. Pinar del Rio, Viñales, 200 m, 26.7.1966, lgt. F. Gregor (38b)

(MM); 1 male (membrane partially damaged by psocids), same data as for holotype (NMNH); 1 male (membrane damaged by psocids), Prov. Matanzas, Varadero, 1-5.IV.1966, F. Gregor, *Henrycapsus* [*nomen nudum*] *parallelus* Maldonado; [red labels, here added for all paratypes] Paratype: *Ceratopsus parallelus* Maldonado (all paratypes NMNH).

Additional material examined.—2 males and 2 females (same pin) and 1 male, Prov. Villa Clara, Maniacal, IV.1989, Ta Luz (HG); 1 male, Prov. La Habana, Bauta, 3.II.1993, L.M.Hdez (IES); 1 male, Prov. Villa Clara, Universidad Central de Las Villas, H. Grillo (HG); 1 male, Prov. P. Rio, La Caridad, Soroa, 5.XII.1994, L.M.Hdez (IES); 1 male, Prov. Matanzas, Ciénaga de Zapata, I.1963, Alayo-Garcia (IES); 1 female, Prov. Pinar del Rio, Península de Guanahacabibes, XI.1967 (IES); 1 female, Prov. La Habana, San Antonio de los Baños, 21.VIII.1994, L.M.Hdez, collected on romerillo (IES); 2 females, Prov. Isla de la Juventud, Nueva Gerona, Hotel Bamboo, X to XI.1974, a la luz (IES; BMNH); 1 male, Prov. Guantánamo, Meseta del Guaso, 21.VI.1990, E. Gutierrez, a la luz (IES); 1 male, Prov. Isla de la Juventud, Sierra de Casas, El Abra, II.1974, L.F.Armas (IES); 1 male, Prov. Pinar del Rio, Meseta del Fonte, San Andrés, 22.XI.1990, L.M.Hdez (IES); 1 male, Prov. Isla de la Juventud, La Victoria, XI.1974, a la luz (NMNH); 2 males, Prov. Villa Clara, Hanabanilla, Escambray, IV.1992, H. Grillo (HG); 1 male, Prov. Pinar del Rio, Soroa, 4.XII.1994, L.M.Hdez, a la luz (IES); 1 male, Plano, Texas, USA, E.S. Tucker, taken at light, with an extra handwritten label *Tiryas punctulatus* Reut (BMNH); 1 male, Cayo District Esperanza, 12.IV.1967, at light, 565, D.J.McCrack (BMNH).

Remarks.—Maldonado (1986) described *C. parallelus* based on 17 specimens. Study of the male genitalia showed that *C. parallelus* is a junior synonym of *C. punctulatus*. Maldonado (1986) reversed his drawings of the parameres for *C. parallelus* and, actually, figures 17 and 18 pertain to the right paramere and figures 15 and 16, to the left.

Ceratopsus punctulatus belongs to *Ceratopsus* group II (Blatchley, 1926) based on

its distinctly punctured pronotum, and to *Ceratopsus* group I (Maldonado, 1986) based on the simple structure of the parameres. This species is known from the West Indies, Mexico, and the United States (Florida, Georgia, Mississippi, North Carolina, and Texas) (Blatchley, 1926; Henry and Smith, 1979; Henry and Wheeler, 1988). It is very common in Cuba and has been collected on *Phaseolus vulgaris* L. (Fabaceae) and *Bidens pilosa* L. (Asteraceae).

Ceratopsus stonedahli Hernández and Henry sp. n. (Figs. 7, 34-36)

Diagnosis.—Distinguished by the structure of the male genitalia, especially the elongate, apically rounded right paramere (Fig. 35) and short vesica (Fig. 36).

Description.—Male (n = 2). Macropterous. Total length 2.55-2.70; general coloration yellow; body distinctly brown punctured dorsally; dorsum with long, erect, yellow setae, especially on head, pronotum, and hemelytron. *Head*: Length 0.40; width across eyes 0.60; width of vertex 0.15; punctured; head three times wider across eyes than length; vertex and frons deeply punctured, vertex weakly depressed; tylus weakly produced; eyes prominent, reddish black, occupying entire height of head in lateral view, and touching anterior angles of pronotum. *Labium*: Extending to metacoxa, segment I reddish, yellow basally; II and III yellow; IV yellow, brown apically. *Antenna*: Brown, linear; antennal socket touching anterior margin of eye; segment I, length 0.18, with a red dash ventrally; II, length 0.60; III, length 0.30, slightly longer than segment IV; IV, length 0.28-0.30; all segments uniformly yellowish and covered by short, erect, yellow setae. *Thorax*: Pronotum: Mesal length 0.37-0.43; posterior width 0.93; punctured; calli weakly produced, area between calli depressed. Scutellum brown, pale whitish along median line, lateral margins and apex distinctly punctured. *Hemelytron*: Uniformly pale yellow; emboliar margins suboval, embolium as wide as width of antennal segment I; cuneal fracture and apical margin of cuneus weakly tinged with red; membrane opaque. *Venter*: Yellow, ostiolar peritreme

pale. *Legs*: Uniformly yellow, with erect yellow setae; apex of last tarsal segment brown. *Genitalia*: Left paramere (Fig. 34), right paramere (Fig. 35), and vesica (Fig. 36).

Female.—Unknown.

Etymology.—Named in honor of our friend and Miridae specialist Gary M. Stonedahl.

Material examined.—HOLOTYPE, MALE. CUBA. Prov. Pinar del Rio, La Tumba, Guanahacabibes, XI.1967, Gloria (IES). PARATYPE: 1 male, same data as for holotype (BMNH).

Remarks.—*Ceratocapsus stonedahli* runs to *C. testatipes* Henry (Carvalho et al., 1983) based on the distinctly punctured pronotum, uniformly pale brown dorsum, vertex and frons lacking dark areas, and the head and hemelytron with brown punctures, and to *C. punctulatus* by the simple structure of male parameres, but it is distinguished from these species and other Cuban *Ceratocapsus* by the characters given in the key and by the structure of the male genitalia. It belongs to *Ceratocapsus* group II (Blatchley, 1926) based on the deeply punctured pronotum, and to *Ceratocapsus* group I (Maldonado, 1986) based on the simple, elongate right paramere.

CONCLUDING REMARKS

Ten species of *Ceratocapsus* are known from the Caribbean Region, seven of which are single island endemics (five from Cuba, one from St. Vincent, and one from Jamaica). The few records from Cuba and other islands such as Hispaniola, Jamaica, and those of the Lesser Antilles reflect insufficient collecting in these areas. Because of the great floral endemism in the West Indies, particularly in Cuba (65%) (Hernández and Stonedahl, 1997), and the known host specificity of the species of *Ceratocapsus*, we expect that more species will be discovered in the area. Hernández and Stonedahl (1997) recorded sixteen species of *Phytocoris* Fallén from Cuba but considering the great ecological diversity of this island, expect that over 25 new species will be discovered.

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