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New *Cryptodacus* (Diptera: Tephritidae) from Panama, with a key to the known species

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Abstract

Cryptodacus trinotatus Norrbom & Korytkowski, new species, and *C. univittatus* Norrbom & Korytkowski, new species, are described from Panama. New distribution records are reported for *C. obliquus* Hendel (Panama), *C. ornatus* Norrbom (Ecuador), and *C. tau* (Foote) (Costa Rica). A key to the species of the genus is provided.

Key words: *Cryptodacus*, Tephritidae, Carpomyini, fruit flies, taxonomy

Resumen

Dos especies nuevas de *Cryptodacus* son descritas de Panamá, *Cryptodacus trinotatus* Norrbom & Korytkowski y *C. univittatus* Norrbom & Korytkowski. Se reportan nuevos registros de distribución para *C. obliquus* Hendel (Panamá), *C. ornatus* Norrbom (Ecuador), and *C. tau* (Foote) (Costa Rica). Se incluye una clave para las especies del género.

Introduction

Cryptodacus Hendel (1914) is a Neotropical genus of the tribe Carpomyini (Tephritidae), which includes *Rhagoletis* Loew and related genera. It was revised by Norrbom (1994) and currently includes eight species (Norrbom et al. 1999). A host plant is known only for *C. silvai* Lima, which was reared from fruit of a species of *Loranthus* (Loranthaceae) (Lima 1947). In this paper we describe two new species from Panama and report new distribution records for three other species. A revised key and wing illustrations also are provided.

Methods

Morphological terminology follows White et al. (1999). Examined specimens are deposited in the Museo de Entomología, Universidad de Panamá (MEUP), Tel Aviv University (TAUI), Utah State University (USU), and the National Museum of Natural History, Smithsonian Institution (USNM). In the Type data and Specimens examined sections the acronym of the depository is in parentheses followed by the barcode number; the latter does not indicate ownership.

The length of the first flagellomere was measured differently than by Norrbom (1994). It was measured medially on the medial (rather than lateral) side because the apical margin of the pedicel is straighter on that side resulting in more consistent measurements.

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***Cryptodacus obliquus* Hendel**
Figs. 12, 13, 24

Specimens examined. PANAMA: Panamá: Parque Nacional Chagres, Altos de Pacora [9°15'28"N 79°21'24"W], Lote H4, McPhail trap 571, 1 May 1998, C. A. Korytkowski, 1 adult without abdomen (USNM USNMENT00214175).

Comments. The single examined specimen from Panama is without its abdomen, except for syntergite 1+2, and is missing most of its setae. It has a diffuse moderate brown area on the gena, but otherwise is similar to the previously known specimens of *C. obliquus* from Peru and Bolivia.

***Cryptodacus ornatus* Norrbom**
Figs. 14, 22, 26

Specimens examined. ECUADOR: Napo: Reserva Etnica Waorani, Onkone Gare Camp, 1 km. S, Transect Ent., 0°39'10"S 76°26'W, Transect 5, Station 9, 220 m., insecticidal fogging, terra firme forest, 9 Oct 1994, T. L. Erwin et al. Project MAXUS lot 918, 1♀ (USNM USNMENT00054001).

Comments. This species previously was known from Colombia and Brazil (Amazonas) (Norrbom 1994).

***Cryptodacus tau* (Foote)**
Figs. 2, 3, 17, 29, 30

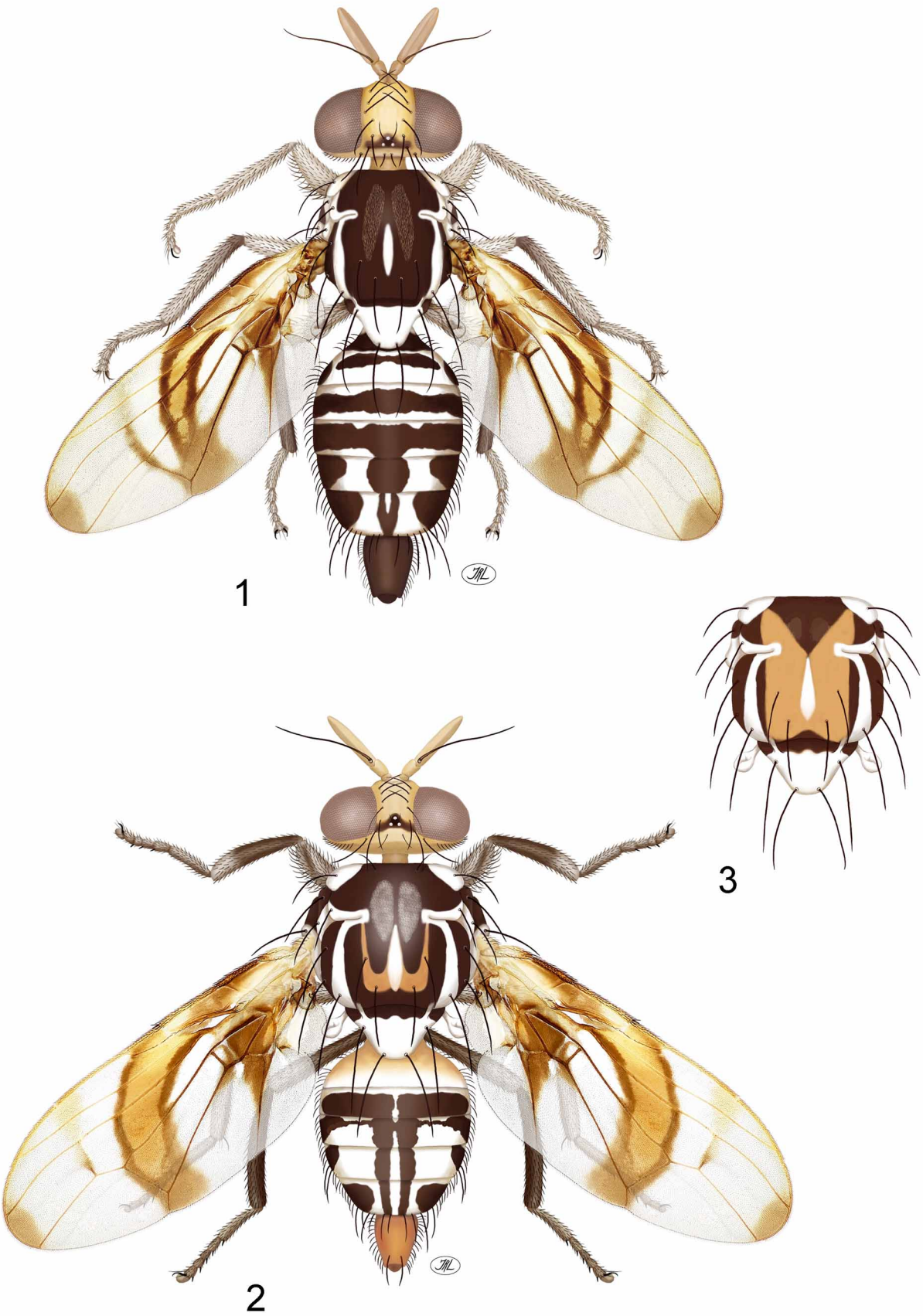
Specimens examined. COSTA RICA: Guanacaste: Río Naranjo, 3 km SE [10°40'N 85°4'W], 22–30 Mar 1992, F. D. Parker, 1♀ (USU USNMENT00216547). MEXICO: Jalisco: Careyes, 12 Feb–19 Mar 1997, F. D. Parker, 1♀ (USNM USNMENT00213633).

Comments. This species previously has been reported from Mexico (Sonora, Sinaloa, Morelos) and Guatemala (Foote 1978, Norrbom 1994). The examined specimens include the first specimen known from Costa Rica along with an additional record from Mexico (Jalisco).

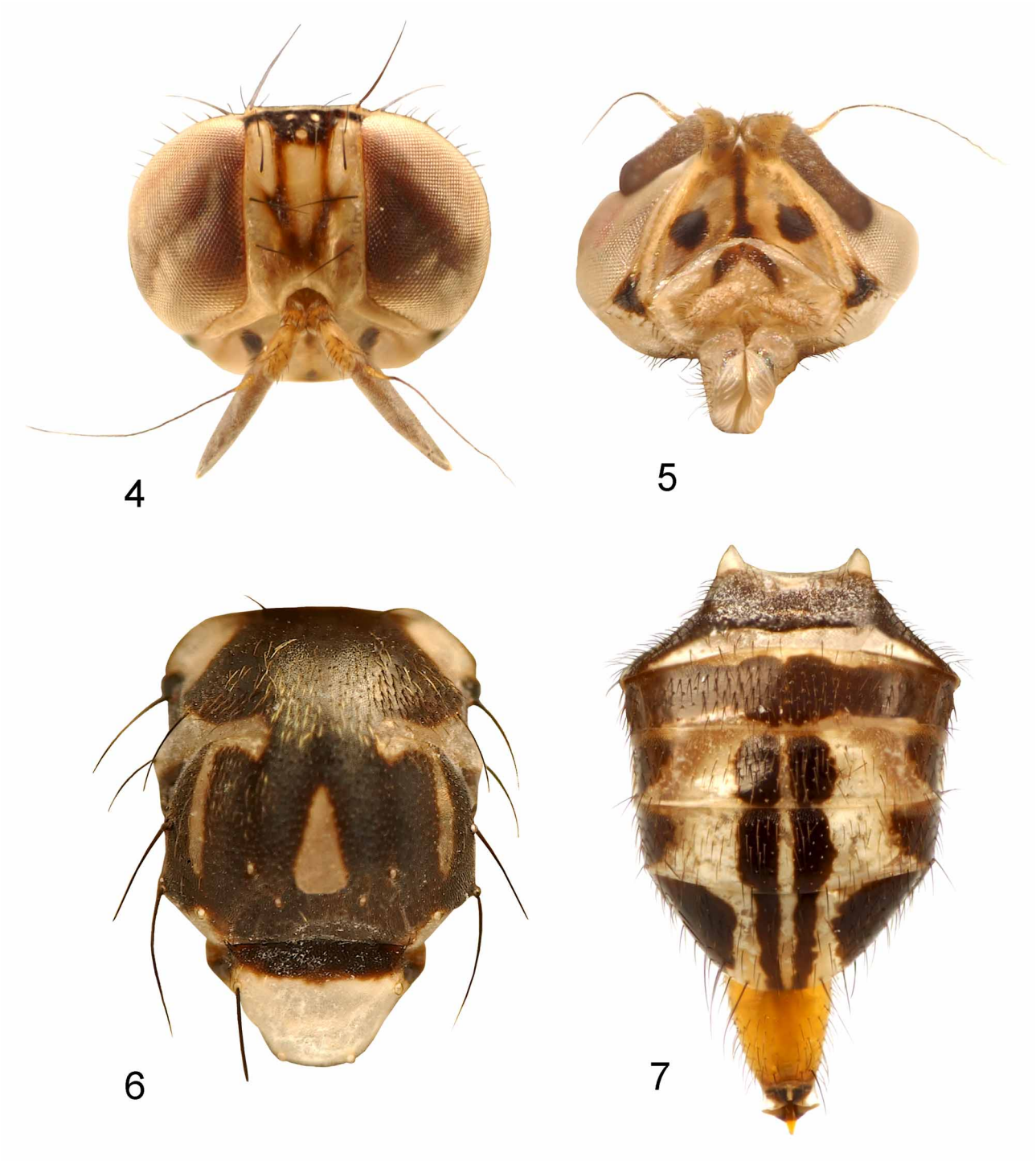
***Cryptodacus trinotatus* Norrbom & Korytkowski, new species**
Figs. 4–7, 19, 33, 34

Diagnosis. This species is very similar to *C. tau* and runs to that species in the key of Norrbom (1994). It differs as follows: face (Fig. 5), in addition to having a pair of large dark brown sublateral spots as in *C. tau*, also with an unpaired narrow medial brown vitta or 2 spots aligned along midline; clypeus dark brown (yellow to orange in *C. tau*); frons (Fig. 4) with brown marking in shape of hollow arrowhead extending from band on vertex and ocellar tubercle (only the brown band or mark on the vertex and ocellar tubercle present in *C. tau* (Fig. 2)); 2 frontal setae (3 in *C. tau*); postsutural sublateral white scutal vitta interrupted anterior to intra-alar seta (usually complete in *C. tau*, interrupted by paler brown area in Jalisco female); cell br hyaline between forks of radial veins, extreme base (posterior to cell bc) hyaline with brown margins (these areas yellow in *C. tau*); orange band from apical part of cell r_1 with distal margin in cell r_{4+5} closer to level of apex of vein R_{2+3} than to level of crossvein dm-cu (its margin equidistant or closer to dm-cu in *C. tau* (Fig. 17)), apex of cell r_1 entirely orange (without hyaline area as in *C. tau*); syntergite 1+2 (Fig. 7) mostly dark brown (except for white band on apical margin) versus mostly yellow in *C. tau* (Fig. 2); aculeus tip (Fig. 34) slightly less sagittate, slightly more elongate, and with slightly finer serrations than in *C. tau* (Figs. 29–30).

Description. Length 4.5–5.0 mm. Wing length 3.7–4.1 mm, width 1.5–1.7 mm.



FIGURES 1–3. 1–2, Female habitus, dorsal: 1, *C. lopezi* (Guatemala: Palín, USNMENT00050345); 2, *C. tau* (Guatemala: Palín, USNMENT00051721). 3, Thorax, dorsal: *C. tau* (Mexico: Cuernavaca, USNMENT00051723).



FIGURES 4–7. *C. trinotatus* (Panama: Cerro Campana):4, head, dorsal (USNMENT00214188); 5, head, anteroventral (holotype); 6, thorax, dorsal (holotype); 7, abdomen, dorsal (holotype).

Head (Fig. 4): Mostly yellow. Frons with brown marking in shape of hollow arrowhead, with narrow brown margins (yellow in center), extending from dark brown band on vertex and ocellar tubercle along medial and anterior margins of orbital plate and connecting in middle of anterior part of frons. 2 frontal setae, 2 orbital setae, well separated, distance between them 2.00–2.67 times distance from anterior seta to eye margin. Ocellar seta weak, 1–2 times length of ocellar tubercle. Gena yellow with elongate dark brown spot extending from eye to ventral margin. Posterior side of head yellow except postgena dark brown ventrally and lateral occipital sclerite with brown spot bordering occipital suture dorsally but ventral to lateral vertical seta,

medial occipital sclerite sometimes with fainter pair of spots aligned with spot on lateral sclerite. Face (Fig. 5) with ventral margin strongly concave, 0.56–0.58 times as high (measured medially) as wide (measured between ventral corners), with pair of large dark brown sublateral spots and unpaired narrow medial dark brown vitta or (1 specimen) 2 spots aligned along midline, lateral margin yellow. Clypeus and prementum dark brown, palpus yellow. Antenna with scape and pedicel yellow, first flagellomere pale to moderate brown, elongate, 4.7–5.2 times as long as wide, apex flattened, in lateral view rounded and sometimes slightly expanded. Arista short pubescent on distal three-fifths.

Thorax (Fig. 6): Mostly dark brown, with following whitish markings: Posterior two-thirds of postpronotal lobe and scutum posterior to it, in one specimen connected to band on transverse suture; band on transverse suture (interrupted medially), across posterior part of notopleuron and posterior margin of anepisternum, almost reaching katepisternum; elongate spot on dorsal margin of katepisternum, extending to or almost to katepisternal seta; single medial and paired sublateral vittae on scutum, medial vitta short, not reaching level of band on transverse suture anteriorly, extending to or almost to acrostichal seta posteriorly, lateral vitta connected to band on transverse suture, extending almost to level of postalar seta but not reaching intra-alar seta; large rectangular area posterior and lateral to intra-alar seta; and scutellum except extreme base of disk and side. Scutum microtrichose except small area on posterior half of presutural part equidistant from midline and lateral margin, with denser submedial vitta. Chaetotaxy normal for genus, postpronotal, 2 notopleural, 1 anepisternal, anepimeral, katepisternal, postsutural supra-alar, intra-alar, postalar, acrostichal, and 2 scutellar setae well developed. Presutural supra-alar seta relatively small, half to two-thirds size of postsutural supra-alar seta. Dorsocentral seta aligned one-half to two thirds distance from postsutural supra-alar seta to postalar seta. Legs with coxae, trochanters except apices, most of femora, and hind tibia dark brown; apical third to half of fore femur and apices of mid and hind femora white to yellow; apex of hind tibia often yellow; other tibiae and tarsi yellow.

Wing (Fig. 19): Crossvein r-m 0.92 distance from bm-cu to dm-cu, covered by dark brown margin of discal band. Pattern including: brown and orange discal band covering all of cells bc and c and pterostigma, curving posteriorly to cover cell r_1 posterior to pterostigma, base of cell r_{2+3}, apex of cell br and crossvein r-m, apical fourth of cells dm and cu_1, band dark brown anteriorly and posteriorly, distinctly paler orange or orange brown in pterostigma, and except for dark brown margins, in cells r_1, r_{2+3}, and br, and anteriorly in cell dm; brown area covering cell bm except anterodistal corner, cell bcu, and base of cell cu_1, extending narrowly along vein Cu_1 to connect with discal band, this spot only narrowly connected to base of discal band posterior to crossvein h, cell br hyaline between forks of radial veins, extreme base (posterior to cell bc) hyaline with brown margins; narrow orange band (displaced subapical band?) from apical part of cell r_1 to middle of cell r_{4+5}, its distal margin in cell r_{4+5} closer to level of apex of vein R_{2+3} than to level of crossvein dm-cu, not connected to discal band posteriorly, but narrowly connected to apical band anteriorly so that apex of cell r_1 entirely orange; and apical band, narrower and orange in cells r_1 and r_{2+3}, brown in cell r_{4+5}.

Abdomen (Fig. 7): With dark brown margins and medial T-shaped mark. Syntergite 1+2 and tergite 3 dark brown except narrow white band on apical margin of syntergite 1+2 and anterior margin of tergite 3, not reaching lateral margin, and narrow sublateral white marks on posterior margin of tergite 3. Tergites 4–6 brown laterally, with sublateral white area, about as broad as lateral brown area on tergites 4–5, much narrower than brown area on tergite 6, and with double submedial row of dark brown spots (forming base of T-shaped mark) separated by narrow medial white vitta narrower than brown spots except on tergite 6. Tergites nonmicrotrichose except anterior two-thirds of syntergite 1+2 and anterior margins of other tergites. Setulae acuminate, black.

Female terminalia: Oviscape orange, 0.90–1.06 mm long, stout. Aculeus (Fig. 33) (n=1) 0.80 mm long, tip (Fig. 34) (n=2) slender, elongate triangular, 0.13–0.14 mm long, apical 0.09 mm sagittate, triangular, 0.065 mm wide, finely serrate. 2 spermathecae globose with elongate base.

Type data. Holotype ♀ (USNM USNMENT00214187), PANAMA: Panamá: Cerro Campana [UTM: 662.557 [EW] and 962.803 [NS]], trap 602, 14 Jun 2002, C. A. Korytkowski. Paratypes, PANAMA: Coclé: El Valle [8°36'N 80°8'W], trap N-8, 19 Oct 2000, C. A. Korytkowski, 1♀ (MEUP 1026.00). Panamá: Cerro Campana, trap 602, 14 Jun 2002, C. A. Korytkowski, 2♀ (USNM USNMENT00214186, USNMENT00214188); Cerro Campana, McPhail traps, Jun–Oct 2003, 39♀ (MEUP 1218.03); Parque Nacional Chagres, Altos de Pacora [9°15'28"N 79°21'24"W], McPhail trap, 2003, C. A. Korytkowski, 1♀ (MEUP 131.03).

Distribution. *Cryptodacus trinotatus* is known only from Panama.

Etymology. The name of this species is a Latin adjective referring to the three markings usually present on the face.

Comments. Unless otherwise indicated, measurements were made on three specimens.

Cryptodacus univittatus Norrbom & Korytkowski, new species

Figs. 8–10, 20, 21, 35–37

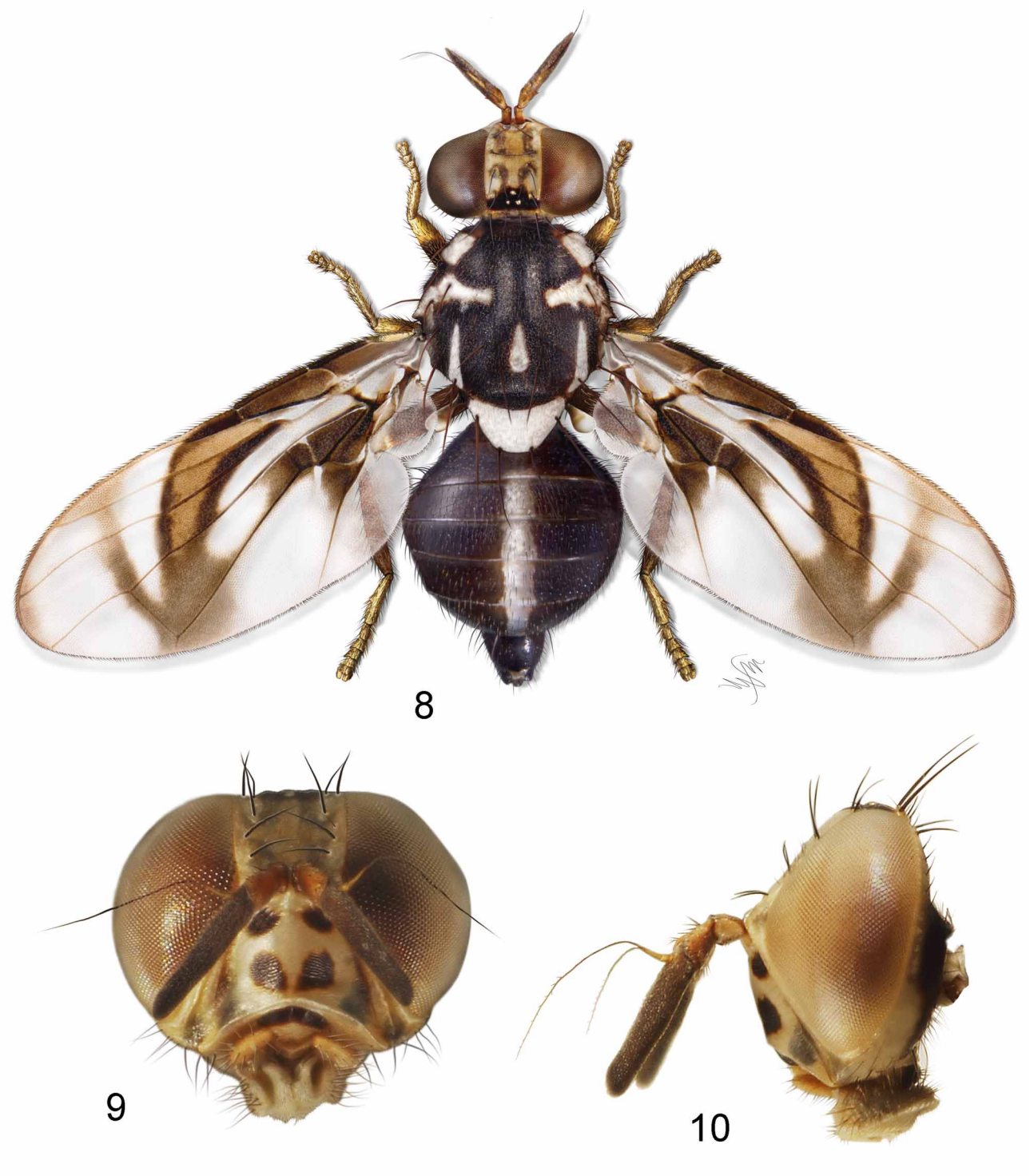
Diagnosis. *Cryptodacus univittatus* is most similar to *C. tigreroi* and runs to that species in the key of Norrbom (1994). It differs in the shape of the aculeus tip (Figs. 35-36), which is much more slender and elongate triangular than in *C. tigreroi* (Figs. 31-32). The subapical band anterior to vein R_{4+5} and the apical band are orange and poorly defined in *C. univittatus* (Figs. 20-21), whereas they are dark brown and well delimited in *C. tigreroi* (Fig. 18). Syntergite 1+2 is mostly dark brown in *C. univittatus* (white only narrowly on posterior margin medially), whereas in *C. tigreroi* there is a white band on the posterior half except on the lateral margin, and *C. univittatus* also lacks the brown genal spot that is present in *C. tigreroi*. The first flagellomere also is slightly shorter in *C. univittatus*, 4.25–5.00 times as long as wide, versus 5.67 times as long as wide in *C. tigreroi*.

Description. Length 4.0–5.0 mm. Wing length 3.65–3.9 mm, width 1.5–1.6 mm.

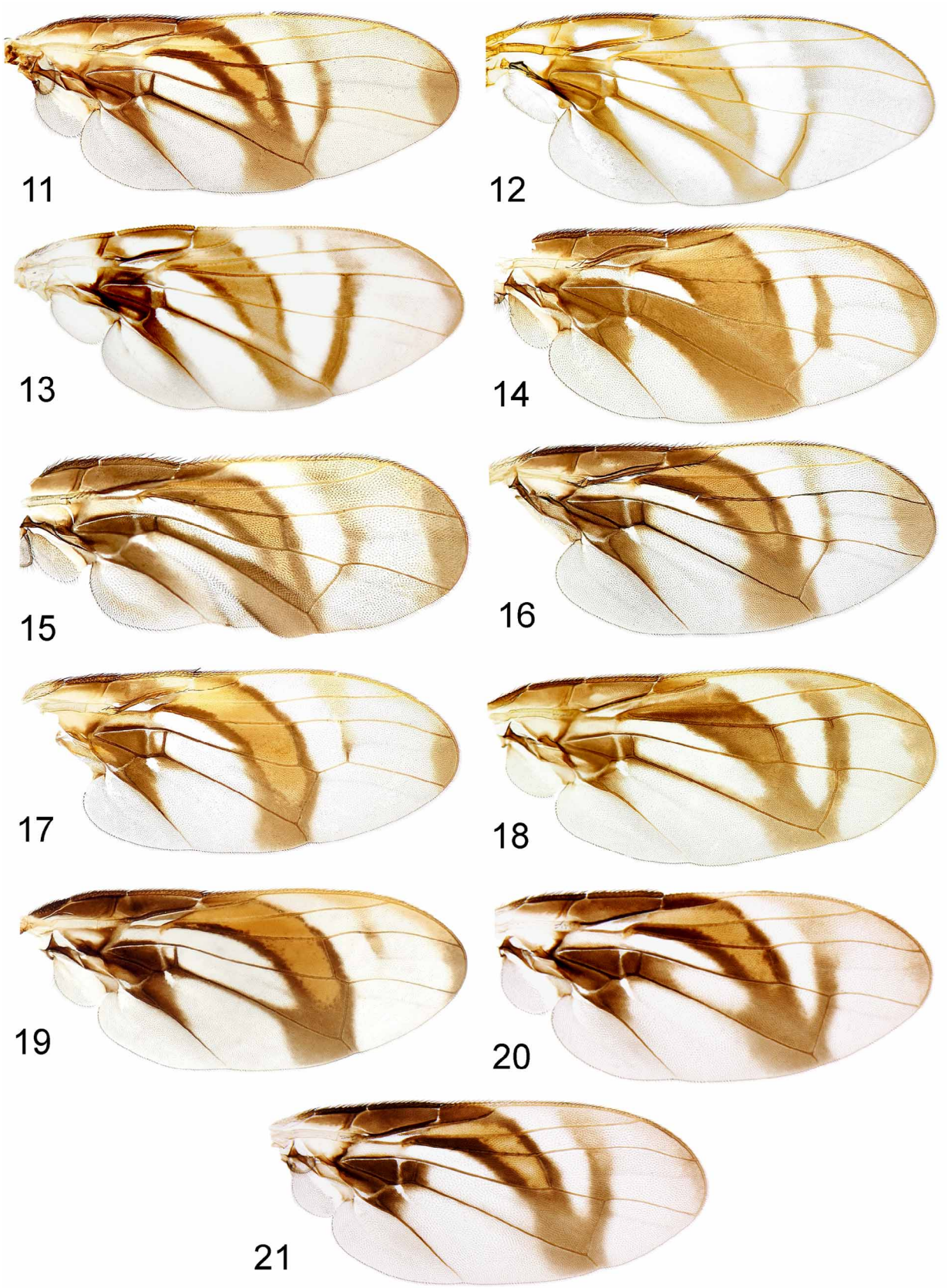
Head (Figs. 9–10): Mostly yellow. Frons with dark brown band across vertex, medially extending anteriorly to include ocellar tubercle, sometimes with grayish or faint brown markings connecting frontal setae and/or extending from brown band to anterior orbital seta. 2 or occasionally 3 frontal setae (third (posterior) seta strong in only 1 specimen, weak in 2 others), 2 orbital setae, well separated, distance between them 1.63–2.46 times distance from anterior seta to eye margin. Ocellar seta weak, 1–2 times length of ocellar tubercle. Gena entirely yellow. Occiput and postgena dark brown except dorsal and anterior margins, brown area almost reaching postocular setae. Face (Fig. 9) with ventral margin strongly concave, 0.47–0.56 times as high (measured medially) as wide (measured between ventral corners), with 4 dark brown spots arranged nearly in square, lateral margin often narrowly brown, sometimes connecting to dorsal spots, gray spot similar in size to brown spots sometimes present near lateral corner on ventral margin. Clypeus and prementum dark brown, palpus yellow to pale brown. Antenna with scape and pedicel yellow, first flagellomere pale to moderate brown, elongate, 4.25–5.00 times as long as wide, apex flattened, in lateral view rounded and often slightly expanded. Arista short pubescent.

Thorax (Fig. 8): Mostly dark brown, with following whitish markings: Postpronotal lobe; band on transverse suture (interrupted medially), across posterior part of notopleuron and posterior margin of anepisternum, almost reaching katepisternum; dorsomedial spot on katepisternum aligned with band on anepisternum but slightly wider, extending to or almost to katepisternal seta; single medial and paired sublateral vittae on scutum, medial vitta short, not reaching level of band on transverse suture anteriorly, extending to acrostichal seta posteriorly, lateral vitta narrowly separated from or often connected (8 specimens) to band on transverse suture, including base of intra-alar seta and extended to posterior margin of scutum; scutellum except base of disk, sides entirely white. Scutum entirely microtrichose, with denser submedial vitta from middle of presu-

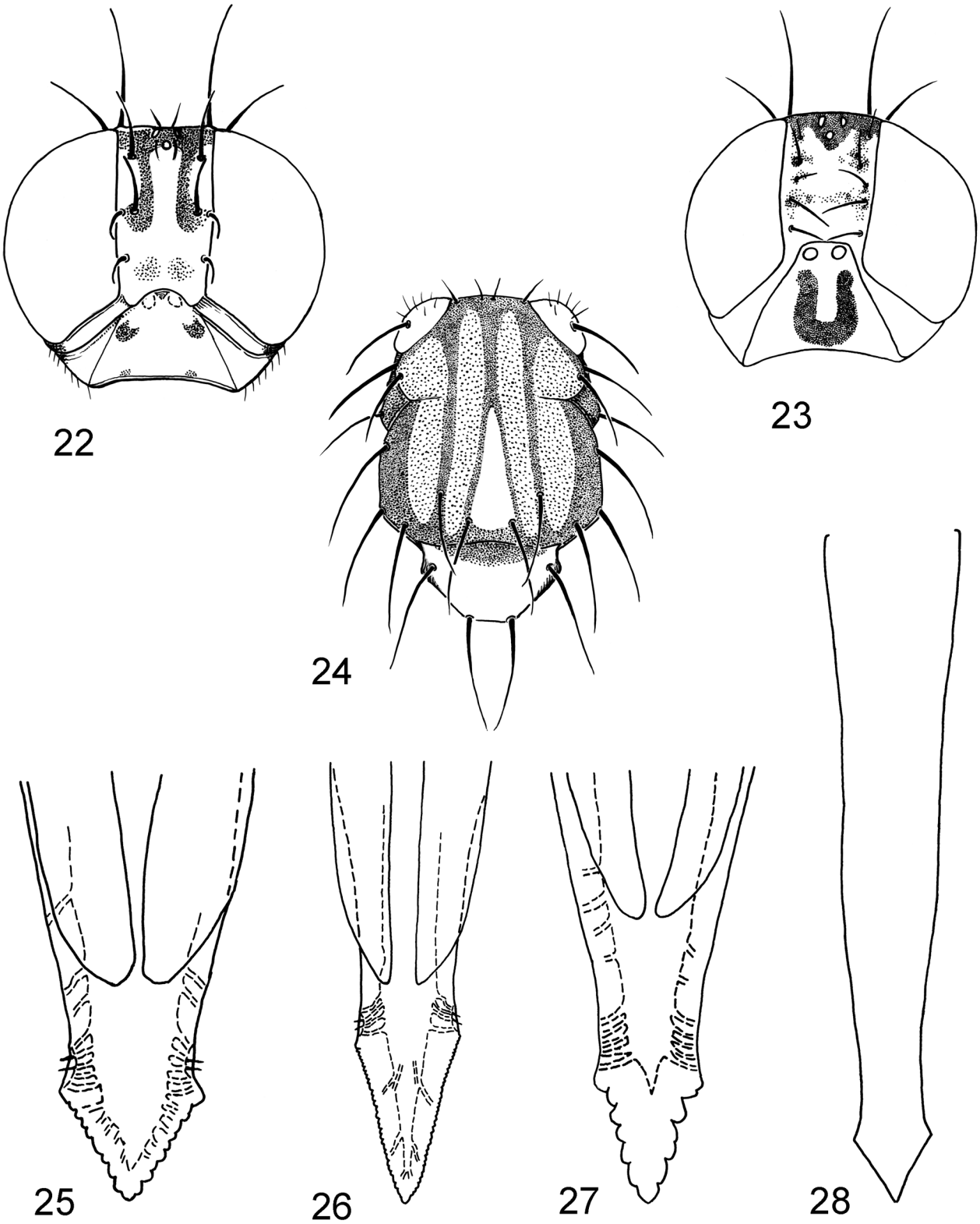
tural part to anterior end of medial white vitta. Chaetotaxy normal for genus, postpronotal, 2 notopleural, 1 anepisternal, anepimeral, katepisternal, postsutural supra-alar, intra-alar, postalar, acrostichal, and 2 scutellar setae well developed. Presutural supra-alar seta relatively small, half to two-thirds size of postsutural supra-alar seta. Dorsocentral seta also relatively small, aligned one-third to two thirds distance from postsutural supra-alar seta to postalar seta. Legs with coxae, most of femora, and hind tibia dark brown; trochanters and sometimes bases of femora yellow to pale brown; apical third to half of fore femur and apex of mid femur white; apex of hind femur often white or yellow; apex of hind tibia often yellow; other tibiae and tarsi yellow.



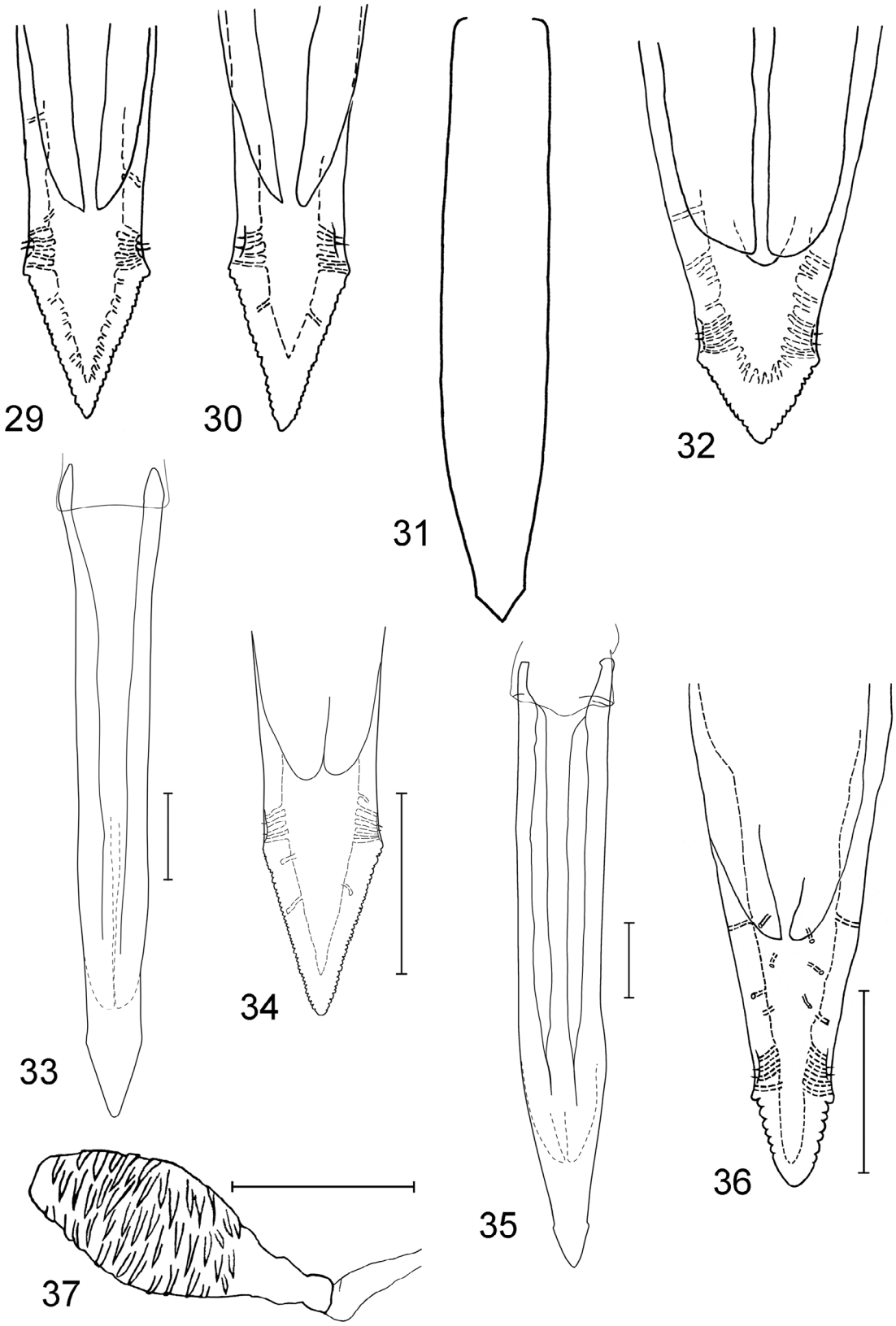
FIGURES 8–10. *C. univittatus* (holotype): 8, dorsal habitus; 9–10, head, anterior and lateral.



FIGURES 11–21. Wings: 11, *C. lopezi* (Guatemala: Sacatepequez, Finca Tempixque); 12–13, *C. obliquus* (Bolivia: Suapi; Panama: Altos de Pacora, USNMENT00214175); 14, *C. ornatus* (Brazil: Amazonas); 15, *C. parkeri* (Costa Rica: 3 km. SE Naranjo); 16, *C. quirozi* (holotype); 17, *C. tau* (Guatemala: Palín, Granja el Coronel); 18, *C. tigreroi* (holotype); 19, *C. trinotatus* (Panamá: Cerro Campana, USNMENT00214186); 20–21, *C. univittatus* (Panama: Altos de Pacora, USNMENT00214176-177).



FIGURES 22–28. 22–23, Head, anterodorsal: 22, *C. ornatus* (Brazil: Manaus; copied from Norrbom 1994, fig. 2B); 23, *C. silvai* (Brazil: Rio Grande do Sul; copied from Norrbom 1994, fig. 2A). 24, Thorax, dorsal: *C. obliquus* (Peru: Vilcanota; copied from Norrbom 1994, fig. 2C). 25–27, aculeus tip: 25, *C. lopezi* (Guatemala; copied from Norrbom 1994, fig. 5D); 26, *C. ornatus* (Colombia; copied from Norrbom 1994, fig. 5E); 27, *C. quirozi* (holotype; copied from Norrbom 1994, fig. 5F). 28, aculeus, *C. silvai* (copied from Lima 1947, fig. 4).



FIGURES 29–37. Female terminalia: 29–30: *C. tau*, aculeus tip (Guatemala: Palín; Mexico: Morelos; copied from Norrbom 1994, figs. 5G–H); 31–32, *C. tigreroi*, aculeus and tip (holotype; copied from Norrbom 1994, figs. 5C, I); 33–34, *C. trinotatus*, aculeus and tip (Panamá: Cerro Campana, USNMENT00214188); 35–37, *C. univittatus*, aculeus, tip, and spermatheca (Panama: El Valle, USNMENT00214191).

Wing (Figs. 20–21): Crossvein r-m 0.69–0.73 distance from bm-cu to dm-cu. Pattern including: brown and orange discal band covering most or all of cell bc, cell c and pterostigma, curving posteriorly to cover cell r_1 posterior to pterostigma, base of cell r_{2+3}, apex of cell br and crossvein r-m, most of apex of cell dm (although small subapical hyaline area present in that cell anteriorly), and apex of cell cu_1, band dark brown anteriorly, distinctly paler orange or orange brown in cells r_1, r_{2+3}, and br except for dark brown margins, and moderate brown posteriorly; brown area covering cells bm and bcu and bases of cells dm and cu_1, sometimes extending narrowly along vein Cu_1 to connect with discal band; narrow brown subapical band covering crossvein dm-cu, broadly connected to discal band posteriorly, paler and diffuse anterior to vein R_{4+5}; and weak, diffuse orange apical band, usually connected anteriorly to subapical band but sometimes largely absent in cells r_1 and r_{2+3}.

Abdomen (Fig. 8): Dark brown except narrow white medial vitta from posterior margin of syntergite 1+2 to apical margin of tergite 6. Tergites nonmicrotrichose except anterior third, anterolateral two-thirds, and medially on syntergite 1+2, anterior margins of other tergites, and sometimes very narrowly medially (middle of white vitta) on tergites 3 and 4. Setulae acuminate, black.

Female terminalia: Oviscape dark brown, sometimes apex orange ventrally, 0.92–1.10 mm long, stout but without strong dorsal hump. Aculeus (Fig. 35) (n=1) 0.86 mm long, tip (Fig. 36) (n=4) slender, elongate triangular, 0.13–0.15 mm long, apical 0.055–0.070 mm sagittate, triangular, 0.04–0.05 mm wide, finely serrate. 2 spermathecae (Fig. 37) subcylindrical with elongate base.

Type data. Holotype ♀ (USNM USNMENT00213719), PANAMA: Panamá: Parque Nacional Chagres, Altos de Pacora [9°15'28"N 79°21'24"W], McPhail trap, 2003, C. A. Korytkowski. Paratypes: PANAMA: Coclé: El Valle [8°36'N 80°8'W], trap N-8, 19 Oct 2000, C. A. Korytkowski, 2♀ (USNM USNMENT00214190-91). Panamá: Cerro Campana, trap 602, 14 Jun 2002, C. A. Korytkowski, 1♀ (USNM USNMENT00214189); Parque Nacional Chagres, Altos de Pacora, McPhail trap, 2003, C. A. Korytkowski, 1♀ (MEUP 612.03); Altos de Pacora, Desvio, McPhail trap 530, 6 Jun 1997, C. A. Korytkowski, 1♀ (MEUP); Altos de Pacora [9°15'28"N 79°21'24"W], Lote H4, McPhail trap 571, 1 May 1998, C. A. Korytkowski, 8♀ (USNM USNMENT00214176-83) 1♀ (TAUI USNMENT00214184); Altos de Pacora, Lote H4, McPhail trap 571, 16 Dec 1994, C. A. Korytkowski, 1♀ (MEUP 571.94) 2♀ (USNM USNMENT00213736-37); Parque Nacional Chagres, Cerro Jefe [9°12'32"N 79°23'38"W], Cerro Pelon, trap 515a, 4 Apr 1997, C. A. Korytkowski, 1♀ (MEUP 82-97); same, 17 May 2006, 2♀ (MEUP 1014.06).

Distribution. *Cryptodacus univittatus* is known only from Panama.

Etymology. The name of this species is a Latin adjective referring to the single medial vitta on the abdomen.

Comments. Unless otherwise indicated, measurements were made on five specimens. All of the type specimens are females and were collected in McPhail traps. The male is unknown. McPhail traps have captured predominantly females of other species as well (the 3 type specimens of *C. lopezi*; the 44 type specimens of *C. trinotatus*; and 5 of 7 specimens from Guatemala of *C. tau*), perhaps indicating that females of this genus are more attracted to fermenting substances or simply disperse more than males.

Key to the species of *Cryptodacus* Hendel

1. Frons yellow except between ocelli. Face entirely yellow. Scutum without white band along transverse suture and without sublateral white vitta or spot at base of intra-alar seta (Fig. 24). Discal band not extended across crossvein dm-cu (Figs. 12–13). Orbital setae separated by less than distance from anterior seta to eye margin. Panama, Bolivia, Peru. ..... *obliquus* Hendel
- Frons with brown mark extended lateral to ocelli (Figs. 1–2, 4, 8, 22–23). Face with dark brown spot or spots. Scutum with white band along transverse suture and with sublateral white vitta (Figs. 1–3, 6, 8) or

at least white spot at base of intra-alar seta. Discal band extended across at least posterior end of dm-cu (Figs. 11, 14–21). Orbital setae separated by more than distance from anterior seta to eye margin (Figs. 1–2, 4, 8, 22–23). 2

2. Occiput and postgena entirely yellow or orange. Female tergites 5 and 6 with sublateral white areas bordering medial brown vitta or vittae (Figs 1–2, 7). Crossvein dm-cu entirely covered by discal or subapical band (Figs. 11, 17, 19). Mexico, Central America. 3

- Occiput and postgena dark brown except anterior margin. Female tergites 5 and 6 without sublateral white areas (Fig. 8). Crossvein dm-cu not bordered by brown medially (Figs. 14–16) except in *tigreroi* and *univittatus* (Fig. 18, 20–21). Costa Rica, South America. 5

3. Crossvein r-m less than 0.75 distance from bm-cu to dm-cu (Fig. 11). Discal band extended across only posterior end of dm-cu. Face with single, medial dark brown spot. Gena without dark spot. Female tergites 5–6 with undivided medial dark brown vitta (Fig. 1). Oviscape dark brown. Guatemala..... ..... *lopezi* Norrbom

- Crossvein r-m more than 0.80 distance from bm-cu to dm-cu (Figs. 17, 19). Discal band extended across all of dm-cu. Face with 2–4 brown markings including pair of sublateral spots. Gena with dark brown spot. Female tergites 5–6 with 2 narrowly separated submedial dark brown vittae (Figs. 2, 7). Oviscape orange. 4

4. Face, in addition to pair of large dark brown sublateral spots, with unpaired narrow medial brown vitta or 2 spots aligned along midline (Fig. 5). Clypeus dark brown. 2 frontal setae. Wing (Fig. 19) with orange band from apical part of cell r_1 with distal margin in cell r_{4+5} closer to level of apex of vein R_{2+3} than to level of crossvein dm-cu; apex of cell r_1 entirely orange. Syntergite 1+2 mostly dark brown except for white band on apical margin (Fig. 7). Panama. ..... *trinotatus* Norrbom & Korytkowski, **n. sp.**

- Face with only dark brown sublateral spots, lacking brown vitta or spots along midline. Clypeus yellow to orange. 3 frontal setae. Wing (Fig. 17) with orange band from apical part of cell r_1 with distal margin in cell r_{4+5} equidistant between levels of apex of vein R_{2+3} and crossvein dm-cu or closer to dm-cu; apex of cell r_1 entirely hyaline. Syntergite 1+2 mostly yellow except for white band on apical margin (Fig. 2). Mexico, Guatemala, Costa Rica. *tau* (Foote)

5. Cell dm with only apical corner hyaline (Fig.14). Abdominal tergites 3 and 4 each with apical white band. Scutum with white spot at base of intra-alar seta, but dark between it and white mark on transverse suture. Face with 2 or 4 brown spots, each side with large dorsal and small ventral spot (Fig. 22) or one elongate spot. Frons with distinct dark brown anterior extensions from band across ocelli (Fig. 22). Colombia, Ecuador, northern Brazil. .....*ornatus* Norrbom

- Cell dm with basal and apical hyaline areas (Figs. 15–16, 18, 20–21). Abdominal tergites 3 and 4 without apical white bands. Scutum with narrow sublateral white vitta from intra-alar seta to or almost to white mark on transverse suture (Fig. 8), except in *quirozi*. Face with 3–4 brown spots, sometimes fused into singe U-shaped mark (Fig. 23). Frons sometimes with irregular brownish or grayish areas (Fig. 8), but without distinct dark brown anterior extensions from dark band across ocelli. 6

6. Postgena brown except anterior margin. Scutum with sublateral white vitta extended anteriorly at least to level of postsutural supra-alar seta (Fig. 8). Postpronotal lobe with at least small white spot (possibly variable in *P. parkeri*). 7

- Postgena entirely yellow. Scutum with white spot posterior to intra-alar seta, not extended anteriorly to level of postsutural supra-alar seta. Postpronotal lobe entirely brown. Mexico.....*quirozi* Norrbom

7. Subapical band (Figs. 18, 20–21) connected to discal band posteriorly, covering all of crossvein dm-cu. Antennal first flagellomere more than 6 times as long as wide. Abdominal tergites 3 and 4 with uninterrupted medial white vitta (Fig. 8). 8

- Subapical band (Fig. 15) not connected to discal band, middle part of dm-cu not bordered by brown. Antennal first flagellomere less than 5.5 times as long as wide. Abdominal tergites 3 and 4 with or without

uninterrupted medial white vitta. 9

8. Aculeus tip (Figs. 31–32) stout, serrate part slightly wider than long. Subapical band anterior to vein R_{4+5} and apical band dark brown and well delimited (Fig. 18). Syntergite 1+2 with white band on posterior half except on lateral margin. Gena with brown spot. Ecuador. ..... *tigreroi* Norrbom

- Aculeus tip (Figs. 35–36) slender, serrate part longer than wide. Subapical band anterior to vein R_{4+5} and apical band orange and poorly defined (Figs. 20–21). Syntergite 1+2 mostly dark brown, white only narrowly on posterior margin medially (Fig. 8). Gena without brown spot. Panama. .... *univittatus* Norrbom & Korytkowski, **n. sp.**

9. Face with 2 ventral and 2 dorsal brown spots. Abdomen with medial white vitta interrupted on tergites 3 and 4. Apical band (Fig. 15) faintly covering all of cells r_1 and r_{2+3} apical to subapical band. Costa Rica .... *parkeri* Norrbom

- Face with 1 ventral and 2 dorsal brown spots, sometimes fused into large U-shaped mark (Fig. 23). Abdominal tergites 3 and 4 with uninterrupted medial white vitta. Apical band faint and narrow in cells r_1 and r_{2+3}. Southern Brazil..... *silvai* Lima

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