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from Costa Rica and Panama
(Coleoptera: Cerambycidae: Cerambycinae: Trachyderini)

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A new species of *Crioprosopus* Audinet-Serville, 1834 from Costa Rica and Panama (Coleoptera: Cerambycidae: Cerambycinae: Trachyderini)

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Abstract. *Crioprosopus baldwini* Eya (Coleoptera: Cerambycidae: Cerambycinae: Trachyderini), **sp. nov.**, from Costa Rica and Panama, is described. An amendment to the key to species of *Crioprosopus* Audinet-Serville, 1834, as presented in Eya (2015), is provided along with illustrations of the key characteristics to differentiate *C. baldwini* from other species.

Key words. Identification key, Central America, taxonomy

Introduction

As currently defined, the genus *Crioprosopus* Audinet-Serville, 1834 (Coleoptera: Cerambycidae: Cerambycinae: Trachyderini) contains 13 species distributed from southern Texas (United States) to Venezuela. As described by Bates (1885: 319), the genus *Crioprosopus* is founded on the supposition that sexual dimorphism is displayed in the sculpture of the thorax where the males are densely punctured over most of the disc, while the females are sparsely punctured, based on *C. rimosus* (Buquet 1840). Currently, all species of the genus, where both sexes are available for examination, display this sexual characteristic. *Crioprosopus* was recently revised (Eya 2015) to include *Callona tricolor* Waterhouse, 1840 after the discovery of the male of this species having a densely punctate thorax. The placement of *C. tricolor* in the genus *Crioprosopus* is also consistent with comments provided by Lacordaire (1869: 170) as described by Linsley (1962: 100). During the 2015 revision, a second group of species closely related to *Crioprosopus*, where males have the dense punctures of the thorax confined to each anterior angle of the disc and females have a glabrous thorax (i.e., smooth, devoid of sculpturing), was moved to a new genus *Callistochroma* Eya, 2015. *Callistochroma* merited a separate generic ranking as they differ nearly as much as *Stenaspis* Audinet-Serville 1834, differs from *Crioprosopus* as suggested by Bates (1885: 319), and as commented by Linsley (1962: 100). Additional characteristics that distinguish *Crioprosopus* and *Callistochroma* from other trachyderine genera are as follows: 1) large body form (23–41 mm); 2) front of the head which is large, perpendicular, and abruptly separated from the antecular space as described by Linsley (1962: 100) (Fig. 1–3); 3) apex of mandibles acute, simple (Fig. 2–3); 4) prosternum with intercoxal process arcuate at apex (Fig. 4); and 5) elytra distinctly marginated laterally, and margins that extend to the apex in some species (Fig. 5).

While revising and identifying cerambycids from Central America, an undescribed species of *Crioprosopus* was discovered. The species is described below and the existing key to *Crioprosopus* (Eya 2015) has been modified to accommodate the new species.

Materials and Methods

Specimens from the following collections were examined and these acronyms are used throughout the manuscript:

CMNH Carnegie Museum of Natural History, Pittsburgh, PA, USA

DJHC Daniel J. Heffern Collection, Houston, TX, USA

EMEC Essig Museum of Entomology, University of California, Berkeley, CA, USA

USNM United States National Museum of Natural History, Smithsonian Institution, Washington DC, USA

This study was performed based on detailed examination of the external structures. Due to the scarcity of this species, and to preserve the integrity of the borrowed materials, comparative morphological examinations of the endoskeleton, wings, and terminalia were not performed. Articles by Hubweber and Schmitt (2006, 2010) should be consulted for a discussion concerning examination and use of genitalia for the taxonomy of this group of beetles. Each taxon name in this review is followed by author(s), publication year (if applicable), and new status (if applicable) abbreviated as follows: **sp. nov.** (*species nova* or new species).

Photographs of the specimens were acquired using a Canon EOS 40D digital camera equipped with an EF 100 mm f/2.8 Macro USM lens at speed of 1/200 sec. aperture f/13 with Canon MT-24EX Macro Twin Lite Flash set at ¼ or ½ power using Kaiser Flash Shoes and Macrolite Adapter 72C mounted on a Beseler CS-14 copy stand. Each specimen was photographed on a layer of cotton placed on a unit tray as a background or was mounted on a Styrofoam microscope stage. References to photographs from a website (e.g., Bezark 2020) are provided with the identification number after the year in the following format: (Bezark 2020, id: #).

The information in the “Type Material” section is provided in the following general order: 1) the country of origin; 2) name of province or state; 3) specific location where collected; 4) date as it appeared on each label; 5) name of collector(s); 6) number of male(s) and/or female(s) collected; 7) the abbreviation of collection where the specimen(s) was (were) procured; and 8) any serial number originally provided if found on the label. The data for each specimen examined were transcribed as they were found on each label if feasible.

Results

Crioprosopus baldwini Eya, sp. nov.

(Fig. 6–10)

Description. Female: Length, 31–32 mm. Form large, parallel-sided, ventral surface pubescent; integument shining, antennae, head, mandibles, legs, and sternum dark brownish to black; pronotum glabrate (i.e., almost glabrous or subglabrous), shiny, yellowish, disc narrowly black on anterior margin with five black macula, three arranged in triangle, two antemedial, and one postmedial, and two smaller ones on anterior angles; scutellum black; elytra straw-yellow, humeral angles, basal margin, and around scutellum black, middle with black corrugated transverse band; apices with black, irregular macula, occupying the entire width; pubescence sparse on dorsum, sternum densely covered with whitish pubescence. Head small, front short, deeply impressed transversely with a pit on each side of the transverse impression; median line extending onto vertex between eyes, vertex glabrate, sparsely punctate; mandibles arcuate, acute at apices; apical segments of labial and maxillary palpi subtruncate at apex, integument impressed dorsally; genae quadrate, lower lobe of eye well separated from base of mandible, surface shining, sparsely punctate, very sparsely covered with short, appressed, whitish pubescence; antennal tubercles broad, level with vertex, apices rounded; eyes moderately large, finely faceted, upper lobes small, well separated; antennae slender with eleven antennomeres, shorter than body, extending to apical third of elytra, scape conical, canaliculate (or carinate) on basal-half, finely, sparsely punctate; basal antennomeres with a few short, erect hairs beneath, sparser dorsally, apices of antennomeres III and IV slightly enlarged, apices of V to XI expanded externally, antennomere III with dorsum slightly flattened, and antennomeres laterally carinate from apex of III to XI; antennomeres from IV densely clothed with very short, appressed, pale pubescence; antennomere III subequal to I, IV shorter than III; each antennomere from V to VII subequal and longer than IV, VIII to X gradually shorter than VII, XI subequal to IV, appendiculate at apical third. Pronotum broader than long (1.5 times as broad as long), posterior margin impressed, sides with small tubercles in middle; disc glabrate, rather coarsely, sparsely, irregularly punctate; sides glabrate, sparsely punctate, pubescence sparse, pale, long and erect; prosternum concavely declivous anteriorly, sparsely, punctate, clothed with erect pale hair; prosternal intercoxal process narrower than coxal cavities, arcuate at apex, coxal cavities wide open behind; mesosternum without obvious projection, concavely declivous anteriorly, sides very finely clothed

with short, silvery pubescence; mesosternal intercoxal process narrower than coxal cavities, flat, level with top of coxae; metasternum with appressed pale pubescence, middle glabrate with a few scattered erect hairs; metepisternum broad, tapered posteriorly, very minutely, densely punctate, interspersed sparsely with larger, fine punctures, pubescence short, appressed, dense. Scutellum triangular, acutely pointed apically. Elytra about 2.1 times longer than broad, distinctly marginated laterally, disc smooth, finely, sparsely punctate at base, punctures dense, coarse, and deeper in middle, becoming finer and confluent near apex, pubescence nearly obsolete except at apices with short, erect golden hairs; apices rounded and obliquely subtruncate, unarmed, sutural angles angulate. Legs slender, hind femora linear, shorter than body, deeply, sparsely punctate, and with short, suberect hairs on dorsal and ventral surface; tibiae slender, apically with two short spines, internally with a row of short, suberect hairs; hind tarsi slender, first segment about as long as following two segments together, third segment cleft to base. Abdomen glabrous, clothed sparsely with long, suberect, golden hairs intermixed sparsely with short pubescence in middle, segments near apices and sides densely clothed with pale, whitish, appressed hair; fifth sternite broadly subtruncate at apex.

Male. Unknown.

Etymology. This elegant species is named for Mr. Brian B. Baldwin of Boquete, Panama, who collected two of three known specimens.

Distribution. Costa Rica and Panama.

Type material. Holotype, female, COSTA RICA: *Puntarenas*, 3 Sept. 1968, P.A. Ramos (EMEC) deposited in EMEC. Additional two paratypes from PANAMA: *Chiriquí*: Boquete, Volcancito Rd., 1 May 2018, on patio of B.B. Baldwin, 1301 m, N 8°46'30.6", W82°26'52.1", B.B. Baldwin (1 female, DJHC), 20 May 2018, on house, B.B. Baldwin (1 female, CMNH).

Discussion. *Crioprosopus baldwini* sp. nov. is closely related to *Crioprosopus servillei* Audinet-Serville, 1834 (Fig. 11–12). Examination of *C. baldwini* reveals that this species is distinct from *C. servillei* based on the following characteristics: 1) vertex that is flatter and not bicarinate as in *C. servillei* (Fig. 13–14) due to the median line on frons that does not extend to the top of vertex (Fig. 15); 2) less protuberant lateral tubercles on pronotum, pronotal disc appears more elongate, width 1.5 times length (Fig. 15), versus *C. servillei* with acute lateral spine and width of the disc about 1.6–1.8 times length (Fig. 13–14); 3) punctures on the pronotal disc that are coarser (Fig. 15); and 4) elytral discs that are rugulose due to denser, deeper, and coarser punctures, especially in the middle of disc, which becomes finer and more confluent toward apices (Fig. 18). The pronotal disc of *C. servillei* is glabrous, and punctures, if present, are much finer (Fig. 13–14), and the elytral discs are smooth, more finely, shallowly punctate, and with punctures becoming finer and denser towards the middle and obsolete towards the apex (Fig. 16–17). The anterior margin of the pronotum of *C. baldwini* is narrowly black with five black maculae, three larger spots arranged in a triangle, two antemedial on either side of middle, one postmedial in middle, and two smaller spots on the anterior angles (Fig. 15). The large spots on the anterior half merge with the narrow black band on the anterior margin in the two examples from Panama. The posterior margins of the pronotal discs are yellow in *C. baldwini*, while the specimens of *C. servillei* examined so far from Mexico and Honduras have posterior margins that are narrowly black. The black corrugated stripe in the middle of each elytron of *C. baldwini* is transverse but narrower at the sutural margin (Fig. 18) while in *C. servillei* the black corrugated band in the middle is oblique and widens at the epipleural margin (Fig. 16–17). *Crioprosopus baldwini* is one of the three *Crioprosopus* species, which include *C. amoenus* Jordan, 1895 and *C. chiriquiensis* Eya, 2015, described exclusively from female specimens; therefore, at this time these three species are retained in this genus until males are captured and the pronotal characteristics are examined.

Crioprosopus baldwini is distributed from Puntarenas Prov., Costa Rica to Boquete, Chiriquí Prov., Panama, while *Crioprosopus servillei* occurs further to the north, from Honduras to Mexico. Relatively few specimens of *C. servillei* have been examined, so far; therefore, the exact range of this species is unclear. However, since most of *C. servillei* specimens examined are from southern Honduras, from the vicinity of Tegucigalpa, the species is also probably found in northern Nicaragua. A photograph of a female specimen that appears to be *C. servillei* is available online (Bezark 2020 id #48426, identified

as *C. servillei*) with the following collection information: Nicaragua, Ocotal, Cordillera de Dipilto, N. Monzonte, 20-X-2003, E. van den Berghe. The locality is approximately 16 km south of the border of Honduras. The distribution of *C. saundersii* White, 1853 is listed as Mexico, Honduras, and Nicaragua; however, other than the photograph of the holotype from Mexico (Bezark 2020 id: #15906), I have not seen any specimen that is as dark in coloration as this holotype from other countries, such as Honduras and Nicaragua. A male and female pair of *C. servillei* found in the USNM collection were mistakenly labeled as *C. saundersii* and may be a source for confusion in distribution of this species.

Amendment to couplet 10, Eya (2015: 376), key to species of the genus *Crioprosopus* Audinet-Serville

1. Elytra metallic green (or blue) or rusty reddish-brown with metallic green-golden yellow **2 (continue to couplet 2, Eya 2015: 376)**
- Elytra not metallic, black with yellow markings, yellowish with dark markings or entirely castaneous or brownish with no markings **9**
- 9(1). Elytra or pronotum with dark or black maculae or fascia; scutellum triangular, as long as wide **10**
- Elytra and pronotum immaculate, concolorous, castaneous to darker reddish brown; scutellum triangular, flat, emarginate medially at base; Venezuela . . . ***C. tricolor* (Waterhouse), male**
- 10(9). Pronotum large, as wide or wider than elytra at base, disc densely punctate from apex to base, sides with lateral tubercles obtuse (Fig. 19–20) or broadly angulate (Fig. 21); metasternum black usually with yellowish macula around base of mid-coxae or entirely reddish castaneous . . **11**
- Pronotum small, narrower than elytra at base (Fig. 6–12), disc either glabrous (Fig. 13–14) or sparsely, separately punctate (Fig. 15), lateral tubercles smaller, acute; metasternum usually all black (female) **13**
- 11(10). Pronotum with obtuse lateral tubercles or sides angulate, recurved upward, disc with small dark glabrate spot in middle of posterior half, and maculae on each side, a pair antemedially and another pair (or contiguous pair) postmedially, and another on the outside of the postmedial maculae (Fig. 19, 20); metasternum black usually with yellowish macula around base of mid-coxae; elytra coarsely, confluent punctate at base **12**
- Pronotum inflated, sides obtusely angulate, confluent punctate, disc with two to five linearly impressed maculae on posterior half (Fig. 21); metasternum reddish castaneous; elytra flavo-testaceous, finely punctate, dark spots on elytra at anterior margin adjacent to scutellum, transverse maculae behind middle adjacent to suture, and irregular band or maculae apically; eastern Mexico, Honduras (Fig. 24) ***C. servillei* Audinet-Serville, male (i.e., *C. divisus* Bates)**
- 12(11). Elytra with a transverse orange band at basal third, another at apical third; head, antennae, and legs black; antennae from antennomere V expanded externally, apices angulate; southwestern Mexico to Costa Rica (Fig. 19, 22) ***C. nieti* Chevrolat**
- Elytra without transverse bands; head, antennae and legs reddish brown; apices of antennomeres not angulate; Guatemala (Fig. 23) ***C. wappesi* Eya**
- 13(10). Elytra with 2 or 3 longitudinal costae, surface either finely separately punctate or densely punctate (Fig. 16–18) **14**
- Elytra with disc glabrous, surface impunctate . . . **(continue to couplet 15, Eya 2015: 376)**
- 14(13). Pronotum glabrous or glabrate and finely, sparsely punctate (Fig. 13–14); elytral disc smooth, finely, shallowly punctate (Fig. 16–17) **15a**
- Pronotum glabrate, rather coarsely, sparsely, irregularly punctate (Fig. 15); elytra with black corrugated transverse band in the middle, which narrows at sutural margin, disc finely, densely and rather deeply punctate in middle (Fig. 18), Costa Rica, Panama (Fig. 6–10) ***C. baldwini* Eya, sp. nov.**

- 15a(14). Elytra straw-yellow, humeral angle and integument adjacent to scutellum black, marking in the middle of disc oblique from sutural margin and widening at epipleural margin, apices with black, irregular, triangular macula; eastern Mexico, Honduras (Fig. 11–12). *C. servillei* Audinet-Serville, female
- Elytra black with broad transverse pale yellow band just behind base, contracting and interrupted at suture, and behind middle with large pale-yellow spot not touching margin and separated from suture; Mexico *C. saundersii* White (Bezark 2020 id: 15905–15906)

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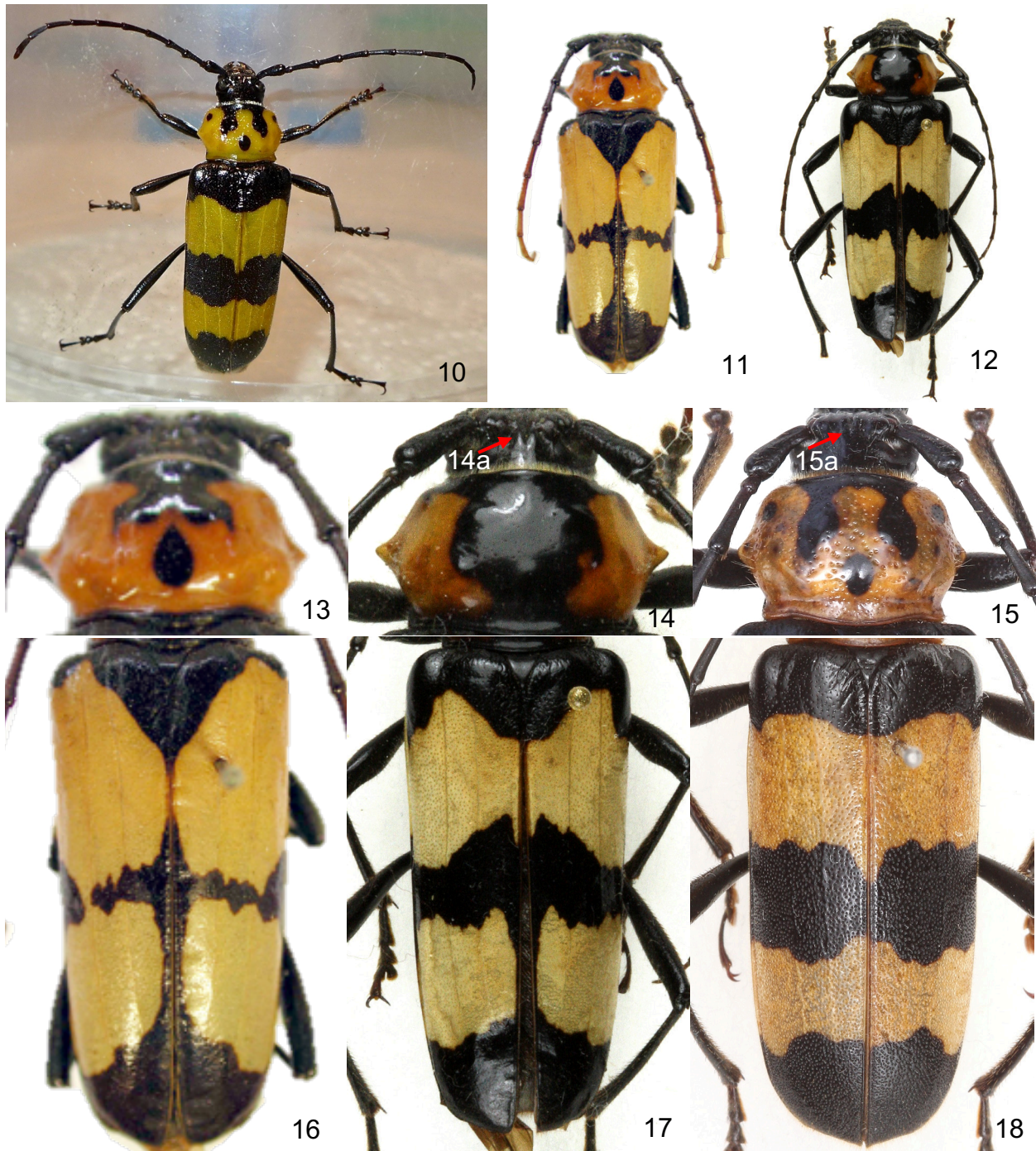
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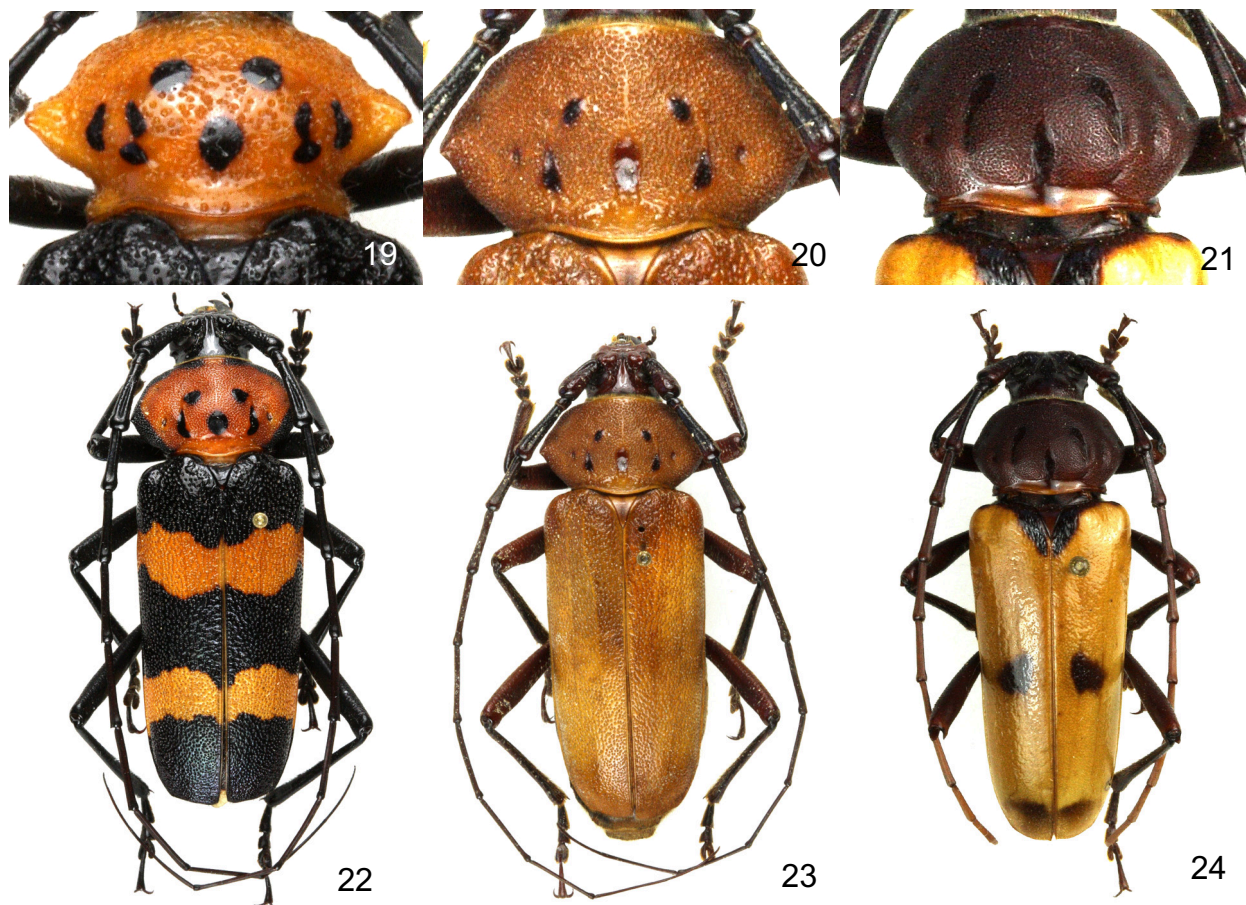
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Figures 1–9. Characteristics of the head of *Crioprosopus*, and dorsal and lateral view of *Crioprosopus baldwini*, **sp. nov.** 1–3) *C. baldwini*, paratype, Boquete, Panama showing characters of the head of *Crioprosopus* as described by Linsley (1962), i.e., “front large, perpendicular, abruptly separated from anteocular space.” 1) Gena large, quadrate well separated from lower eye lobe. 2: 2a) Apex of mandibles acute, simple; 2b) Dorsal anterior margins of genae ridged. 3: 3a) Front perpendicular to vertex and recessed or indented between the “anteocular space” (i.e., between the dorsal anterior margin of gena) so the front is “pushed back in towards the eye.” 4: 4a) Prosternum with intercoxal process arcuate at apex. 5) Elytra distinctly marginated laterally. 6–7) Dorsal and lateral view of *C. baldwini*, holotype, female, Puntarenas, Costa Rica. 8–9) Dorsal and lateral view of *C. baldwini*, paratype, female, Boquete, Chiriquí Prov., Panama.



Figures 10–18. Comparison of characteristics of *C. baldwini* and *C. servillei*. **10)** Live specimen of *C. baldwini*, paratype, 32 mm, provided courtesy of Mr. Brian Baldwin. **11)** *C. servillei*, female, holotype, Interior Mexico, 38 mm. **12)** *C. servillei*, female, El Zamorano, Honduras, 39 mm. **13–14)** *C. servillei* with broader pronotum, acute lateral spines, and glabrous disc; **14a)** Vertex bicarinate. **15)** *C. baldwini*, paratype with elongated pronotum, less protuberant lateral tubercles, and coarsely, sparsely punctate disc; **15a)** Vertex flattened, median line of frons not extended deeply to top of vertex. **16–17)** *C. servillei* elytral discs smooth, finely, shallowly punctate. **18)** *C. baldwini* elytral disc rugulose with denser, deeper and coarser punctures.



Figures 19–24. Figures for use with amended key above. **19)** *Crioprosopus nieti*, female, La Perla de San Martin, Veracruz, MX, with lateral tubercles on sides of pronotal disc obtuse. **20)** *C. wappesi*, male, Baja Verapaz, Guatemala, with lateral tubercles on sides of pronotal disc obtuse. **21)** *C. servillei*, male (i.e., *C. divisus*), La Paz, Honduras, with sides of pronotal disc broadly angulate; with pronotum inflated. **22)** *C. nieti*, male, 14–15 km W Sontecomapan, Veracruz, MX with transverse orange band on elytra, leg and antennae black. **23)** *C. wappesi* without transverse band on elytra, head, antennae and leg reddish brown. **24)** *C. servillei*, elytra flavo-testaceous, finely punctate, and disc with dark spots on anterior margin adjacent to scutellum, transverse maculae in middle, and irregular macula apically.