Three new species of *Eupholus* Boisduval (Coleoptera, Curculionidae, Entiminae) from West New Guinea

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Abstract: Three new species of the genus *Eupholus* Boisduval 1835 from West New Guinea are described: *Eupholus faisali* **spec. nov.**, *E. bortolussii* **spec. nov.** and *E. casadioi* **spec. nov.** The adults and genitalia are depicted.

Rangkuman: Tiga spesies baru genus *Eupholus* Boisduval 1835 dari New Guinea Barat diletakan: *Eupholus faisali* **spec. nov.**, *E. bortolussii* **spec. nov.** and *E. casadioi* **spec. nov.** Gambar spesies serta gambar genetalianya disajikan.

Keywords: West New Guinea, *Eupholus*, new species

Introduction

To date 67 species of *Eupholus* Boisduval, 1835 are known, many of which have been described recently (Porion, 2000; Riedel & Porion, 2009; Limoges & Le Tirant, 2019). The genus is highly collected for its beauty but still is little known because of the vastness of the natural environment in which it lives. The host plant of very few species are known. Until now it was possible to divide the membership of the various species in two groups; *E. schonherii* group and *E. loriae* group (Riedel, 2002).

Materials and methods

This study is based on analysis of 9 specimens obtained by collectors F. Bortolussi and K. Price, some of which are provided to them by an Indonesian insect dealer in May 2019. Some of these specimens are currently in the author's collection, later they will be reassigned in different collections, named as below and in the future they will be assigned to renommated natural history collections.

Habitus illustrations were made using a Canon EOS 6D (20 MP) equipped with a 100 mm macro lens mounted on a tripod. About 20 images at different focal levels have been captured. Pictures of the genitals were made with a Stereo microscope Zeiss stemi 305 with included camera.

All images were developed and processed with Photoshop CC 2017.

Type depositories are cited using the following codens:

MGC Matteo Grasso collection, Turin, Italy
FBC Fabrizio Bortolussi collection, San Daniele del Friuli, Udine, Italy
KPC Kelly Price collection, VT 05301, United States of America

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Eupholus faisali spec. nov. (figs. 1, 5-7)

urn:lsid:zoobank.org:act: 5F227F39-3406-4341-9315-4CEA02C172B5

Holotype: ♂ MGC: [Indonesia], Irian Jaya, 20km southwest of Jayapura, v.2019, local collector.
Paratypes: 1 ♂, 1 ♀ FBC, KPC: same as holotype.

Diagnosis: An *Eupholus* species with two sidebands glabrous interrupted in the middle of the elytra, specimens of variable colour from green to blue. Presence of a barely indicated transverse band coinciding with the apical elytral callosities. Below a comparison is made between superficially similar specimens found at the same locality which can be identified only by close scrutiny.

Description: total length 22.55 mm; pronotum+elytron 17.45 mm.
Head with dorsal surface covered with green blue metallic oval scales, sometimes milky except for glabrous areas located on the front side and behind the eyes. Distance between the eyes 2.28 mm.
Rostrum width at the base 1.87 mm, 3.05mm height. Densely covered with subrotund light green and blue with purple shades scales. Dorsal area furrowed with an average depth semicovered of green and blue mixed color scales mixed with light brown setae, forming two barely hinted longitudinal subcylindrical protuberances covered by scales. Antennal scrobe complete in average dilated pterigo. Apex of the rostrum with suberect light colored hair. Epistome heart-shaped with ridges slightly hinted.
Antenna with funicle+club 8 mm, scape and funicle densely covered with green blue scales mixed with setae except for scape in the proximal part to the rostrum. Scape retracted ends in mid-eye. Funicles covered with whitish setae. Club dark brown.
Pronotum base 5.43 mm, 5.21 mm height, characterized in the dorsal part by wide black glabrous median depression occupying about 1/5 of pronotum, flanked on both sides by area covered with blue and green scales interrupted by small subradial glabrous branches very evident at the base of pronotum. Two glabrous stripes on the sides that continue on the elytra.
Scutellum a small pentagon with raised hairless center surrounded by whitish hairiness.
Elytron with distance between the humeri 5.56 mm, 12.24 mm height. Little prominent humeri callosity with a rectangular projection. Almost completely absent apical calluses, two black glabrous spots on the elytron shaded in purple scales. Median longitudinal and glabra stripe, two glabrous marginal and longitudinal bands long 2/3 of the elytra, vast areas of elytron covered with blue-green scales distributed without a distinctive pattern.
Legs evenly covered by green and blue round scales and interspersed with setae, elongated and lying scales on the tarsi.

Genitalia: Aedeagus (figs. 5, 6) of narrow and long shape, wider side margins at the base, apical end with a slightly rounded tip, in lateral view (fig. 6) with strong curvature. Holotype transfer apparatus lost during dissection.

Differential diagnosis: The presence of two glabrous elytral bands and a median glabrous one which begins on pronoto and ends to 2/3 of the elytra makes *E. faisali* very similar to *Eupholus loriae* (Gestro, 1902), *E. beccari* (Gestro, 1875) *E. nagaii* (Porion, 1993) and *E. prasinus* (Heller, 1910). *Eupholus loriae* as well as *E. nagaii* possess a small ridge on the midline of the rostrum and one scutellum covered by elytra. *Eupholus prasinus* and *E. beccari* have elytral sidebands

covered with dark blue or black scales. *Eupholus faisali* possesses a median furrowed line on the rostrum with glabrous sidebands and visible scutellum.

Etymology: This species is named after Faisal Latutuapraya (Bali, Indonesia). Faisal is the local dealer and hunter who usually works in Waigeo island. He kindly provided the holotype and paratypes.

***Eupholus casadioi* spec. nov.** (figs. 3, 11, 15-16, 18-19)

urn:lsid:zoobank.org:act: 36D0AA89-E567-43DB-9806-C4E1DE8B167D

Holotype: ♀ MGC: [Indonesia], Irian Jaya, 20km southwest of Jayapura, v.2019, local collector.
Paratypes: 3 ♂♂, 4 ♀♀ MGC: same as holotype.

Diagnosis: An *Eupholus* species with two transversal elytral bands semi-covered by purple scales inscribed in areas sublinear semi-glabrous. A third glabra line above the apical calluses.

Description: total length 21.70 mm; pronotum+elytron 17.08 mm.
Head with dorsal surface covered with oval scales of pastel blue and milky blue with sometimes metallic colour except for glabrous areas located on the front and laterally behind eyes. Distance between eyes 2.14 mm.
Rostrum width at base 1.66 mm, 3.03mm height. Covered by subovate scales iridescent blue. Dorsal side furrowed with an average depth line that forms two remarkable longitudinal subcylindrical protuberances glabrous inside. Antennal scrobe ends in pterigo not dilated. Apex of the rostrum with ligh brown suberect setae. Epistome heart-shaped, bordered by distinct ridges.
Antenna with funicle+club 5 mm, scape and funicle covered with blue scales with the exception to scape in its own distal insertion (near club). Ventral plate scapes very visible. Scapes retracted end at 1/3 of the eyes. Funicle with dense white setae. Dark brown club with fine light brown pubescens.
Pronotum base 5.09 mm, 4.24 mm height, characterized in the dorsal part by thin black glabrous median line flanked on both sides by area covered with blue and green subrotund scales. Central location of pronotum with more sparse colored squamosity; unlike the sides it has a greater concentration of mixed transparent, green and blue scales.
Scutellum characteristic, circular and glabrous.
Elytron with distance between humeri 6.33 mm, 12.84 mm height. Quite prominent humeri with a rounded shape. Interval 5 in apical third with small dull tubercle covered with transparent scales. Two transversal bands with subrotund purple color squamosity, bordered on the upper and lower sides by irregular black line covered by transparent subrotund scales with a tendency to scattering towards the elytral suture. Third transversal glabrous band above the apical calluses.
Space between the third line and apex densely covered with purple, blue and metallic green scales.
Legs evenly covered with purple subovate scales expansed and interspersed with light brown setae, purple color scales to very elongated shape and lying on the tarsi.

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Genitalia: Sternite VIII as in fig. 11. Tergite VIII mildly elongated, rounded at apex as in fig. 16. Hemisternite (figs. 18-19) 2.9 times longer than high, apex mildly concave, apical half trapezoid, apically weakly elongate; stylus inserted in middle of apex.

Etymology: This species is named in honor of Carlo Arrigo Casadio (Casola Valsenio, Italy) for the experience and passion that he employs in entomology as well as the ability to pass on, with patience and perseverance, his knowledge to others.

Eupholus bortolussii spec. nov. (figs. 4, 12- 14, 17, 20)

urn:lsid:zoobank.org:act: BCCE0F9E-E76B-4007-AC3D-1689E5638F18

Holotype: ♀ MGC: [Indonesia], Irian Jaya, 20km southwest of Jayapura, v.2019, local collector.
Paratypes: 3 ♀♀ FBC, KPC: same as holotype.

Diagnosis: An *Eupholus* species with five glabrous transversal elytral bands and a glabrous area at the base of the elytra that projects out just below the scutellum.

Description: total length 25.46 mm, pronotum+elytron 19.87 mm.
Head with dorsal surface covered with oval metallic green and milky-white scales, rarely milky-blue except for glabrous areas located on the front side and behind the eyes. At the base of the head extremely elongated scales. Distance between the eyes 2.44 mm.
Rostrum width at the base 2.01 mm, height 3.3 mm. Covered with subovate scales of blue-green metallic color. Dorsal area furrowed with glabrous line forming two longitudinal subcylindrical protuberances blankets by identical coloured scales, base of the rostrum with characteristic small and deep concavity. Antennal scrobe ends in pterigo slightly dilated. Apex of the rostrum with suberect brown and pale yellow hair. Epistome heart-shaped, bordered by strong distinct ridges.
Antenna with funicle+club 5.8 mm, scape and funicle covered with blue metallic scales and white setae except for scape in the proximal part to its insertion. Scapes retracted end in mid-eyes. Funicle with dense presence of white, long and stretched setae. Club black, lighter on the tip, with fine dark brown pubescens.
Pronotum base 6.3 mm, 5.01 mm height, densely covered with green and blue scales, characterized in the dorsal surface by thin glabrous midline with apex, near the base of the head, which forms a double glabrous arc with lateral subtriangular extremes, with tips pointing downwards.
Scutellum small, hairless subcircular in ovaliform suture.
Elytron with distance between humeri 6.83 mm, 14.98 mm height. Very prominent humeri callosity with a rounded form. Apical callosities with obtuse tubercle covered by green and blue metallic scales. Five glabrous transverse bands, the fourth narrower band is interrupted. Base of elytron with vastly glabrous area to form like a subtriangular stain which connects to the scutellum.
Legs evenly covered with purple subcircular expanded scales and interspersed with white setae, scales of metallic blue to extremely elongated shape, and lying on the tarsi.

Genitalia: Sternite VIII as in fig. 12. Hemisternite (figs. 17, 20) 2.5 times longer than high, apex strongly concave, apical half sub-rectangular, apically triangular, elongated stylus inserted in middle of apex. Spermatheca as in fig. 13.

Differential diagnosis: The presence of five glabrous transverse bands makes *E. bortolussii* very similar to two others *Eupholus* species such as *E. quinitaenia* (Heller, 1915) and *E. geoffroyi* (Guérin-Méneville, 1830). *Eupholus quinitaenia* has almost always the scutellum finely covered by yellow-green hair, not hairless as *E. bortolussii*, moreover *E. quinitaenia* has less prominent shoulders and thinner transversal bands. *Eupholus geoffroyi* has, in the usual phenotype, three glabrous bands and only in var. *chrysites* (Heller, 1915) has four bands, the second of which always interrupted at the elytra suture. In none of the two species named above there is the strong presence of a large glabrous area at the base of the elytra, almost forming a sixth transversal band.

Etymology: This species is named in honor of the Italian collector Fabrizio Bortolussi (San Daniele del Friuli, Italy), for his support and opportunity to study the material.

Discussion

The apparent similar habitus of *E. faisali* and other *Eupholus* species examined (figs. 2, 8- 10) turns out to be considerably different when thoroughly studied. Due to the presence of a longitudinal line on the rostrum that forms two subcylindrical zones, *Eupholus faisali* belongs to *schoenherrii* group of Riedel (2002). *Eupholus casadioi* and *E. bortolussii* are also part of the same group. Although all specimens were found by the collector in the same geographical area this is not a surprise because the specimens belong to the same group of *E. schoenherrii* which appears to be the most common species in Papua New Guinea and Papua, Indonesia. The distribution area known in Papua for *E. prasinus* (Mt. Cyclops) is distant from that of *E. beccari* (Dorey (= Manokwari) and Rubi, Nabire) but proximal to one of the three new species described. The specimen which is analysed and compared with *E. faisali* and which genitalia are illustrated (figs. 9, 10), belongs to the *loriae* group of Riedel (2002) and is rather unusual being apparently similar to *Eupholus loriae* for features such as a ridge on the rostrum, scutellum covered by elytra and lack of ridges on epistome area. The specimen dissection has also confirmed and highlighted in the transfer apparatus (fig. 10) the characters described by Riedel. Although the specimen examined is far from its typical distribution area (Aseki, Tekadu, Pawamanga-Watut and Marawaka, Papua New Guinea), I found no substantial differences between the specimen examined and *E. loriae* during this study.

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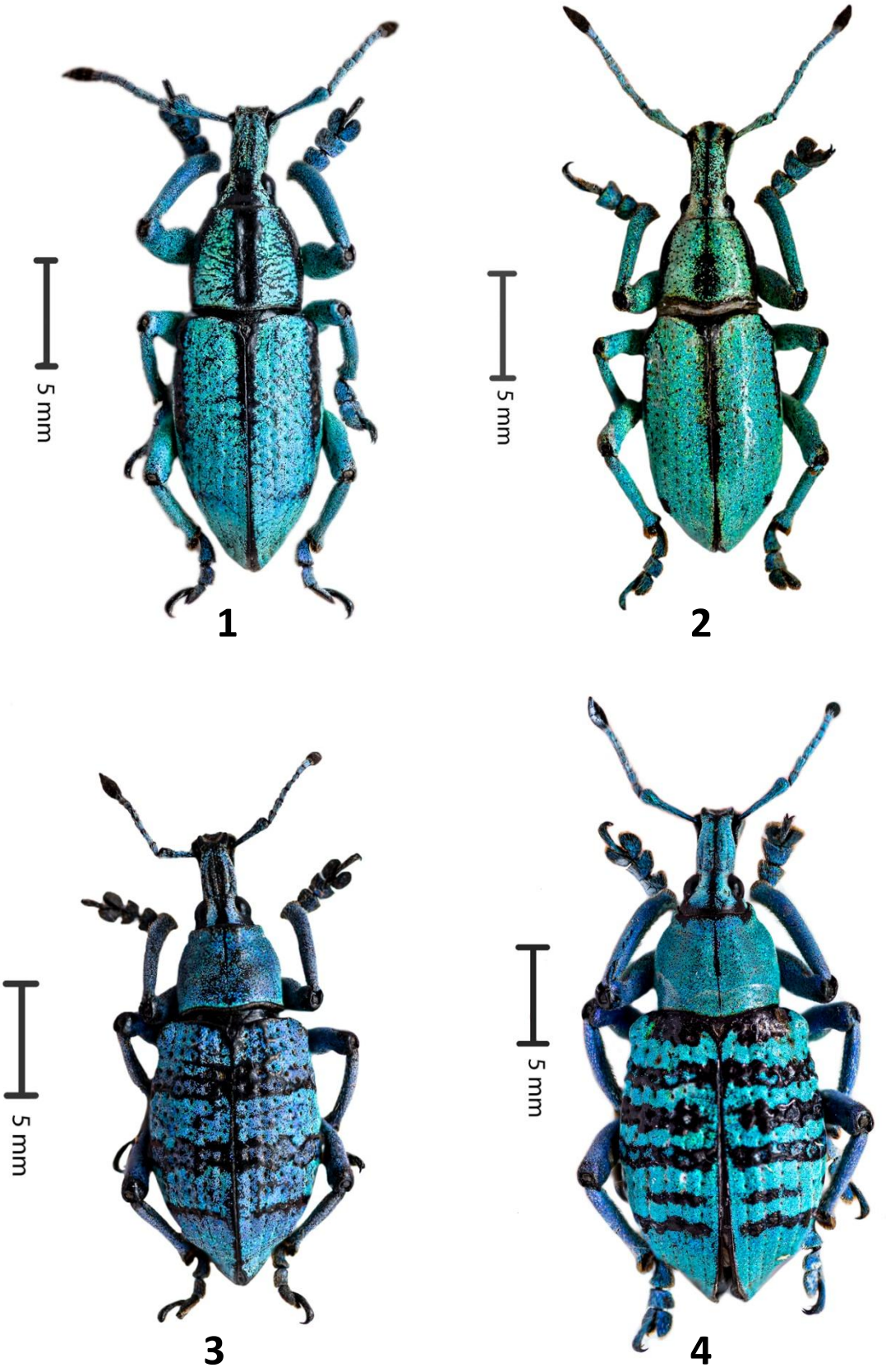

Figs. 1-4. Habitus of *Eupholus* species: **1.** *Eupholus faisali*, ♂ holotype; **2.** *Eupholus* spec. (*loriae*?), ♂; **3.** *Eupholus casadioi*, ♀ holotype; **4.** *Eupholus bortolussii*, ♀ holotype. Scale lines 5 mm.

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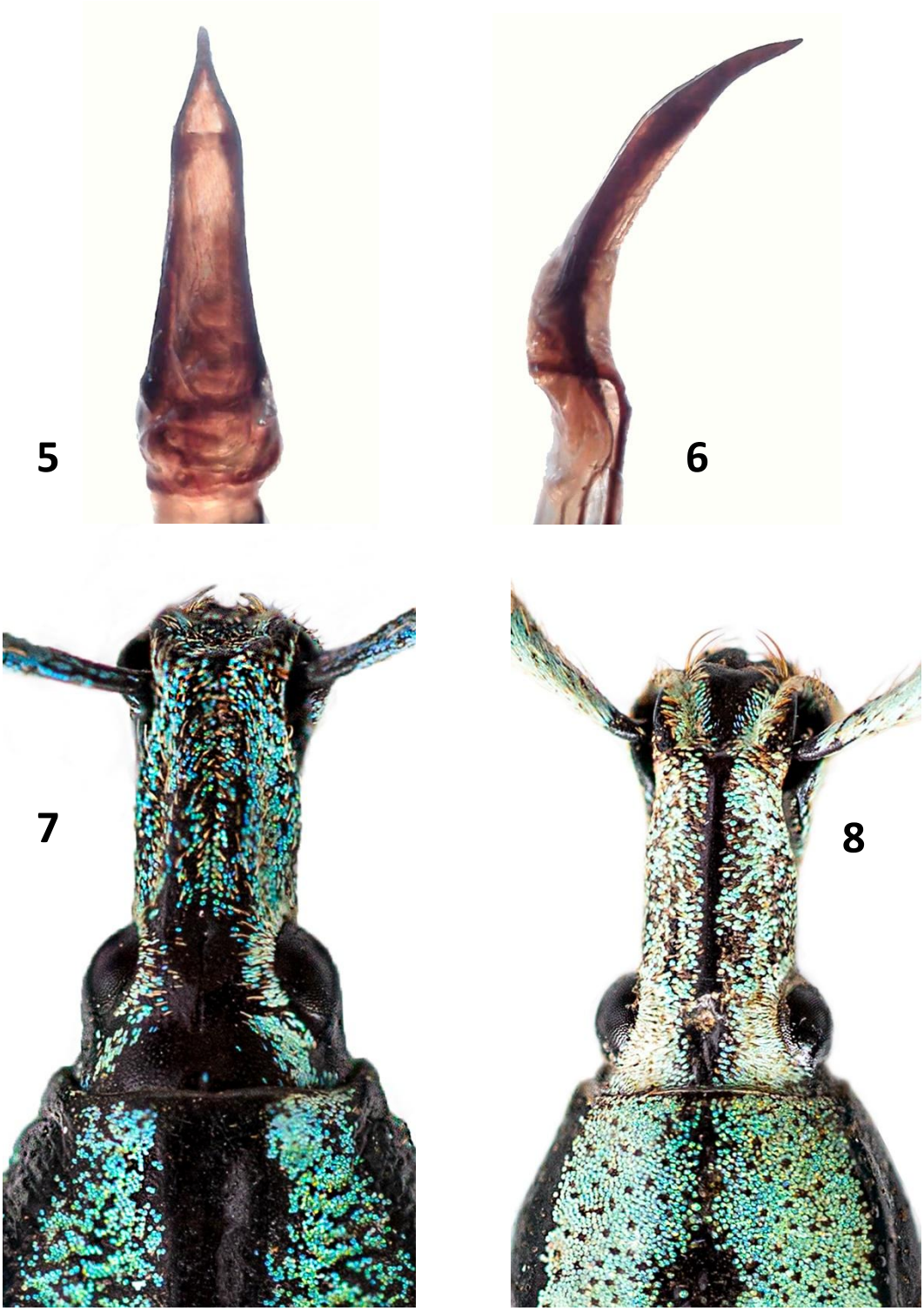
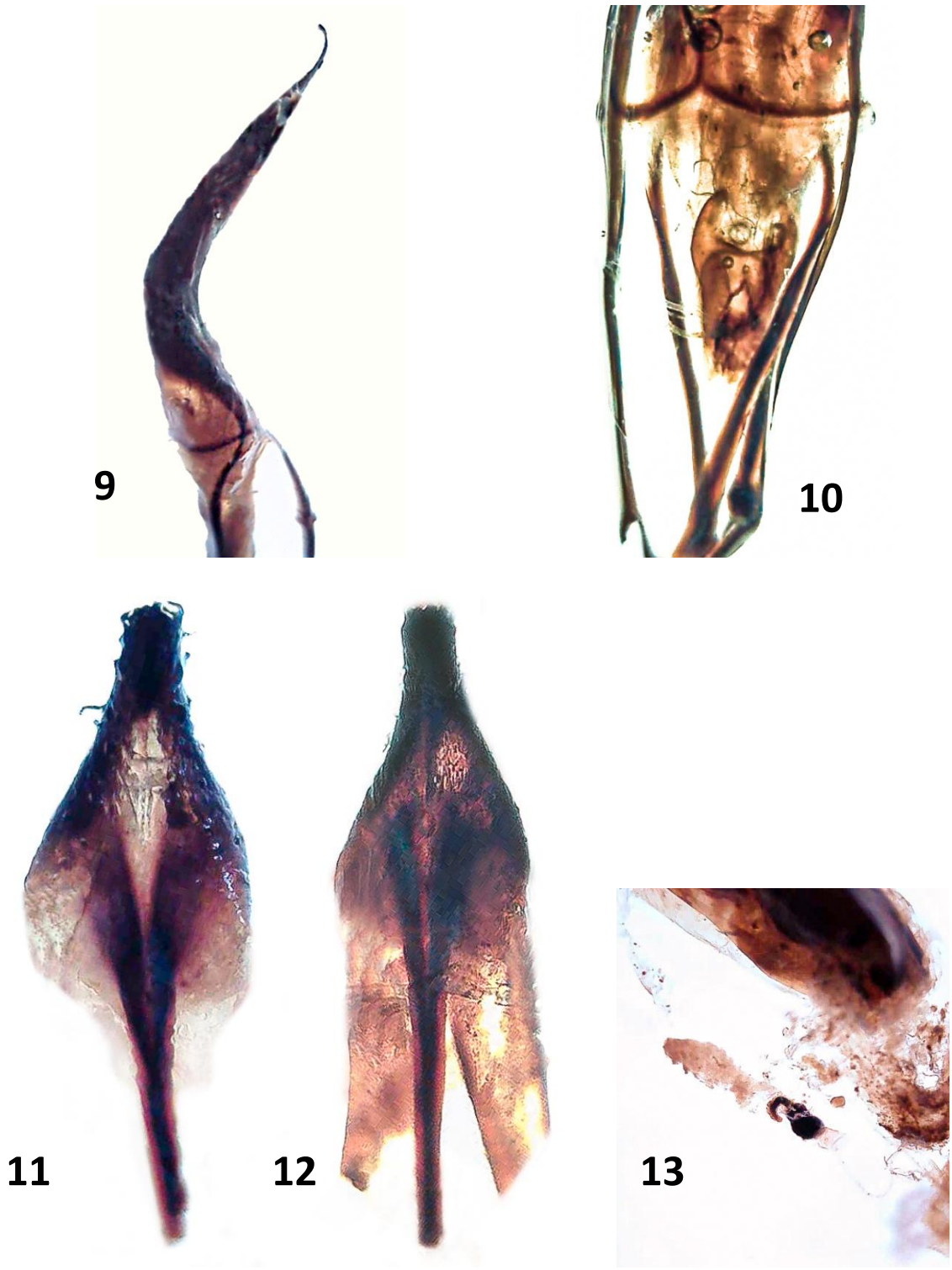


Figs. 5-6. Male genitalia of *Eupholus faisali*: **5.** Aedeagus in glycerol, dorsal view, holotype; **6.** Aedeagus in glycerol, lateral view, holotype.
Figs. 7-8. Head and rostrum of *Eupholus* species: **7.** *Eupholus faisali*, holotype; **8.** *Eupholus* spec. (*loriae*?).



Figs. 9-10. Male genitalia of *Eupholus* spec. (*loriae*?): **9.** Aedeagus, lateral view; **10.** transfer apparatus, resting position.
Figs. 11-13. Female genitalia of *Eupholus* species: **11.** *Eupholus casadioi*, sternite VIII; **12.** *Eupholus bortolussii,* sternite VIII; **13.** *E. bortolussii,* spermatheca.

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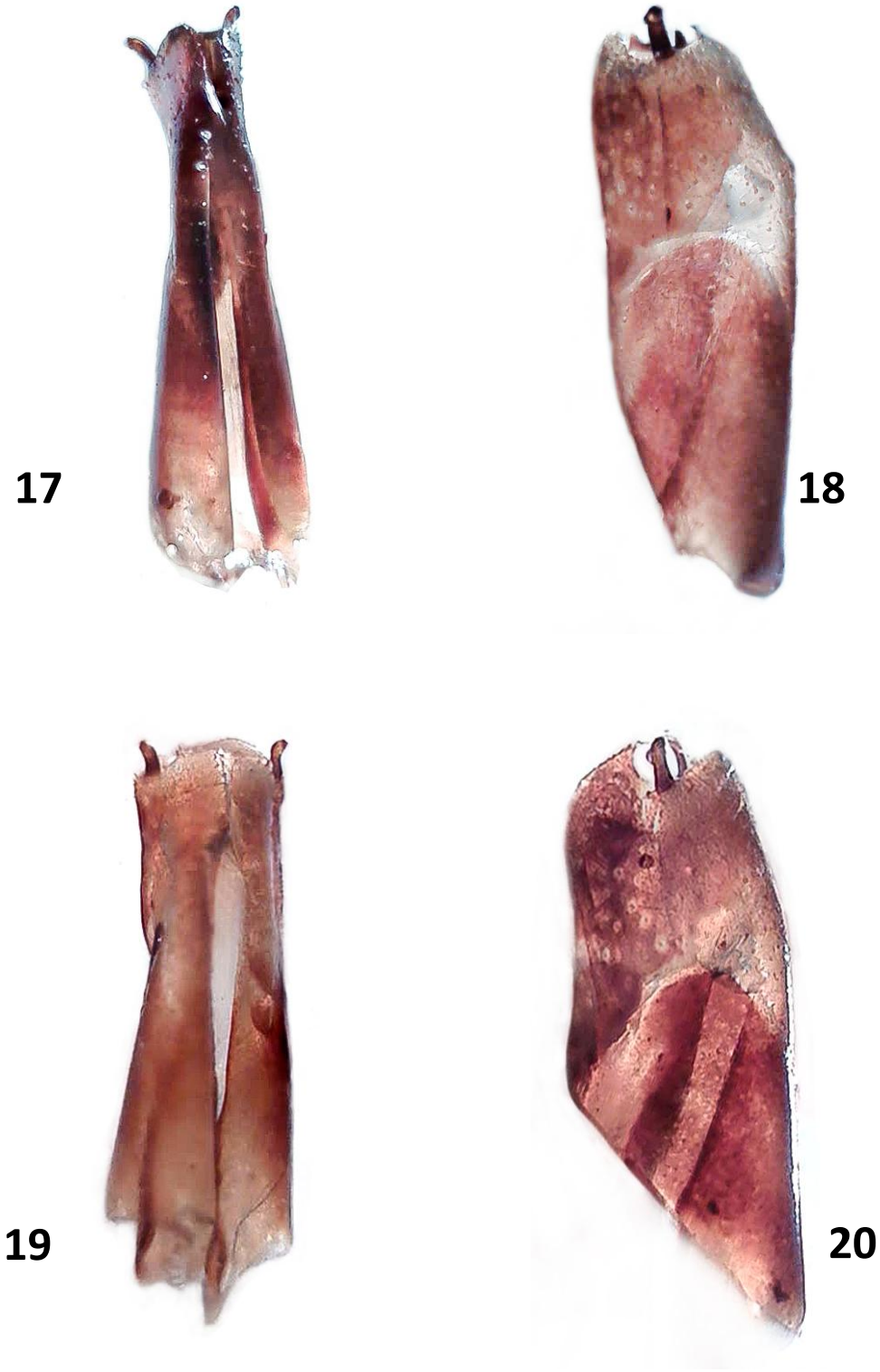
Figs. 14-15. Head and rostrum of *Eupholus* species: (14) *Eupholus bortolussii*; (15) *Eupholus casadioi*.
Fig. 16. *Eupholus casadioi*, tergite VIII, ♀ holotype.



Figs. 17-20. Female genitalia of *Eupholus* species: **17.** *Eupholus bortolussii*, hemisternites, holotype, ventral view; **18.** *Eupholus casadioi*, left hemisternite, holotype; **19.** *Eupholus casadioi*, hemisternites, holotype; **20.** *Eupholus bortolussii*, left hemisternite.

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Fig. 21. Locality of *Eupholus faisali*, *E. casadioi* and *E. bortolussi* (red dot).