



And then there were six: a revision of the genus *Phanolinopsis* Scheerpeltz (Coleoptera: Staphylinidae: Staphylininae)

STYLIANOS CHATZIMANOLIS

Department of Biology, Geology and Environmental Science, University of Tennessee at Chattanooga, 615 McCallie Ave. Dept 2653, Chattanooga, TN 37403, USA. E-mail: stylianos-chatzimanolis@utc.edu

Abstract

The previously monotypic genus *Phanolinopsis* Scheerpeltz is revised and four species are described as new: *Phanolinopsis erythros* sp. n. from Guatemala and Panama, *Phanolinopsis goniakos* sp. n. from Costa Rica, *Phanolinopsis metak-senios* sp. n. from Costa Rica and Panama, and *Phanolinopsis norahae* sp. n. from Colombia and Ecuador. *Torobus fassli* (Bernhauer) is transferred to *Phanolinopsis* as *Phanolinopsis fassli* comb. n. Detailed morphological illustrations and a key is provided for the identification of the species.

Key words: Xanthopygina, Staphylinini, *Phanolinus*, *Torobus*

Introduction

Monotypic genera are frequently ignored in revisionary studies because taxonomists prefer dealing with larger groups of taxa and/or are more interested in correcting mistakes done at a larger scale. Some examples include the taxonomic issues associated with the genus *Trigonopselaphus* Gemminger and Harold (Chatzimanolis 2013, 2014a, 2015). However, sometimes monotypic genera simply represent the tip of the iceberg regarding species diversity in a particular group, with many more species awaiting description. For example, Ashe (1986) described the genus *Seeveriella* Ashe (in Aleocharinae) with a single species and later Gusarov (2003) described 27 additional species. Similarly, Brunke & Solodovnikov (2014) described five new species of the previously monotypic genus *Mimosticus* Sharp.

Scheerpeltz (1968) described the monotypic genus *Phanolinopsis* to accommodate the species *Phanolinus discedens* Sharp. Sharp (1884) had clearly indicated in the original description that *Phanolinus discedens* is “least misplaced in *Phanolinus*” and “it will probably form a distinct genus”. In this paper I describe four new species of *Phanolinopsis* and transfer a species from *Torobus* Herman into *Phanolinopsis*.

Materials and methods

I examined specimens using an Olympus ZX10 stereomicroscope and I took photographs using a Canon 40D camera equipped with a MP-E 65 mm macro lens on a Cognisys StackShot 3X macro rail and controller (<https://www.cognisys-inc.com/products/stackshot/stackshot.php>). Images were automontaged using Helicon Focus Pro 6.7.1 (<http://www.heliconsoft.com/heliconsoft-products/helicon-focus/>). SEM photographs were taken using a Neoscope JEOL desktop SEM with gold-coated specimens. Dissected aedeagi were placed in small glass vials pinned underneath the specimen. I measured the overall length of the specimens from the frons to the posterior margin of abdominal segment VIII. All other measures were done on the widest/longest part of the structure. Type labels are separated by a slash ‘/’. Text within brackets [] is explanatory and was not included in the original label. Maps were produced using the online program SimpleMappr (Shorthouse 2010). In this revision, I use the phylogenetic species concept of Wheeler & Platnick (2000). Datasets for each species in DarwinCore format are available online at https://figshare.com/authors/Stylianós_Chatzimanolis/384794.

I examined specimens from the following institutions:

BMNH	The Natural History Museum, London, U.K. (R. Booth).
CNC	Canadian National Collection, Ottawa, ON, Canada (A. Davies).
FMNH	Field Museum of Natural History, Chicago, IL, U.S.A. (C. Maier)
MAIC	Michael Ivie Collection, Montana State University, Bozeman, MT, USA (Michael Ivie).
SDEI	Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany (S. Blank).
SEMC	Snow Entomological Collection, Biodiversity Institute, University of Kansas, Lawrence, KS, USA (Z. Falin).
UTCI	The University of Tennessee at Chattanooga, Chattanooga, TN, USA (S. Chatzimanolis).
ZMUC	Zoological Museum, University of Copenhagen, Copenhagen, Denmark (A. Solodovnikov).

Taxonomy

Phanolinopsis Scheerpeltz, 1968

(Figs. 1–44)

Type species. *Phanolinus discedens* Sharp, 1884, fixed by original designation and monotypy.

Diagnosis. *Phanolinopsis* stands out among other xanthopygines because it is one of few genera that has an impunctate or nearly impunctate pronotum (Figs. 7–12); with the exception of punctures around the margins of pronotum, species have at most four (or on rare occasions five) punctures at the center of the pronotum, each one delimiting the corner of a square. The only other xanthopygines with similar punctation patterns on the pronotum to *Phanolinopsis* are *Ocyolinus amethystinus* Sharp (Chatzimanolis & Ashe 2009; Chatzimanolis In press), and some species of *Torobus* Herman. A second key diagnostic characteristic of *Phanolinopsis* is the presence of an extended and punctate postmandibular ridge, visible both in dorsal (Figs. 7–12) and lateral (Figs. 13–18) views of the head that makes the posterolateral corners of the head appears ‘angular’. This feature easily distinguishes *Phanolinopsis* from *Ocyolinus amethystinus* (in addition to the lack of long mandibles present in *Ocyolinus amethystinus*). Unfortunately, some species of *Torobus* have both a pronotum punctation pattern and a postmandibular ridge similar to *Phanolinopsis*. Thankfully, these taxa in *Torobus* can be easily distinguished from *Phanolinopsis* by the presence of a postcoxal process (absent in *Phanolinopsis*), and the presence of a porose structure on abdominal sternum VII in males (absent in *Phanolinopsis*). Other diagnostic features of *Phanolinopsis* include the following: head transverse (not subquadrate or trapezoid); antennomeres longer than wide or subquadrate but not transverse; mandibles short, blunt, with small tooth; neck prominent, with punctures; elytra shiny with medium to large punctures; and terga V–VI without subbasal (arch-like) carinae.

Despite the name, *Phanolinopsis* is probably not closely related to *Phanolinus*. Besides the metallic coloration of the head and pronotum, these two genera share few other characteristics. Based on the structure of the antennae, and the morphology of the head and pronotum, *Phanolinopsis* is probably closely related to the genus *Isanopus* Sharp (Chatzimanolis 2008). The molecular phylogenetic analysis of Xanthopygina (Chatzimanolis 2014b) did not include any specimens of *Phanolinopsis*, however, a forthcoming analysis (Chatzimanolis in prep.) that will incorporate morphological data (in addition to the molecular dataset) and a more comprehensive species list will provide more definitive answers.

Description. Habitus as in Figs. 1–6, body medium sized, 9.5–15.7 mm in total length. Color of head and pronotum metallic green-brown, purple-brown, brown, blue, green or red; elytra metallic blue-green, blue-purple, purple-brown, brown-green, blue or green; mouthparts, antennae, mesoscutellum, ventral surface of body and legs, reddish brown to brown; abdomen reddish brown to brown except posterior part of VII and VIII orange.

Head transverse, with medium-sized to large setose punctures around margin of head and microsculpture; with two large punctures anteriorly, each adjacent to antenna; surface of epicranium matte due to micropunctures and microsculpture. Clypeus slightly emarginate; anteclypeus not expanded. Eyes medium to large, prominent, occupying 1/2 to 3/4 of lateral margins of head. Ventral surface of head with transverse microsculpture and large sparse punctures; postoccipital suture and ventral basal ridge present; infraorbital ridge pronounced posteriorly; postmandibular ridge present, prominent, extending from near mandible to lateral side of head, delineated by

multiple setose punctures (Figs. 13–18); gular sutures separated throughout length with narrowest point between them medio-posteriorly; nuchal depression prominent forming well defined neck; neck with microsculpture, micropunctures and multiple small punctures.



FIGURES 1–2. Habitus photographs of species of *Phanolinopsis* Scheerpeltz. 1. The holotype of *P. discedens* (Sharp), total length = 13mm. 2. The holotype of *P. erythros* Chatzimanolis, total length = 14.2mm.

Antenna (Fig. 21) with antennomeres 1–3 with multiple rows of macrosetae; antennomeres 4–11 with few macrosetae but covered with microtrichiae; antennomeres 1–9, 11 longer than wide; antennomere 10 longer than wide or subquadrate; antennomere 1 twice as long as antennomere 2; antennomere 3 longer than 2; antennomeres 4–7 subequal in size; antennomeres 8–10 subequal in size, typically shorter than antennomeres 4–7.

Mouthparts with labrum medially emarginate to its base. Mandibles as in Fig. 19; small curved, blunt; left mandible with small bicuspid molar; right mandible with small tooth medially; mandibles with dorsolateral groove extending from condyle to just above tooth; prostheca setose. Maxilla as in Fig. 20; galea and lacinia densely setose; maxillary palpi 4-segmented; P_1 small, about $1/3$ as long as P_2 ; P_2 curved, elongate, longer than P_3 ; P_2 – P_3 with large setae apically; P_4 elongate, subequal in length to P_3 . Hypopharynx as in Fig. 22. Submentum with one long and one shorter anterolateral setae in each end; labial palpi 3-segmented; with transverse microsculpture; P_1 subequal in length to P_2 ; both P_1 and P_2 with several long setae; P_3 with distal end slightly dilated, not securiform.



FIGURES 3–4. Habitus photographs of species of *Phanolinopsis* Scheerpeltz. 3. The holotype of *P. fassli* (Bernhauer), total length = 14.0mm. 4. The holotype of *P. goniakos* Chatzimanolis, total length = 12.1mm.

Pronotum subquadrate to slightly longer than wide; lateral margins of pronotum concave in dorsal aspect; pronotum broadest in apical 1/3 and narrower at basal angles. Hypomeron expanded, with transverse microsculpture and few micropunctures; superior and inferior marginal lines of hypomeron separate throughout their lengths; superior line fully visible from above, extending around anterolateral margin of pronotum and contacting inferior line at neck fossa; no portion of dorsum of pronotum visible from below. Surface of pronotum matte due to microsculpture and micropunctures; with scattered large setose punctures around margins but with at maximum 4–5 punctures on pronotum disc; margins of pronotum with several large setae. Postcoxal process absent. Mesoscutellum prominent, with dense polygon-shaped microsculpture and micropunctures; with multiple rows of small punctures. Basisternum with dense polygon-shaped microsculpture and carina; anterior marginal depression present; furcasternum with medial carina pointed vertically; furcasternum without polygon-shaped microsculpture.

Elytra slightly shorter than pronotum; with multiple rows of nearly confluent punctures and large setae; with sparse longitudinal microsculpture; elytra appearing shining due to lack of extensive microsculpture. Hind wings fully developed. Mesoventrite with anterior margin forming “lip”; with dense polygon-shaped microsculpture and few punctures along edges; without median carina. Metaventricle with dense uniform medium-sized punctures; metaventral process small, rounded, with v-shaped emargination.

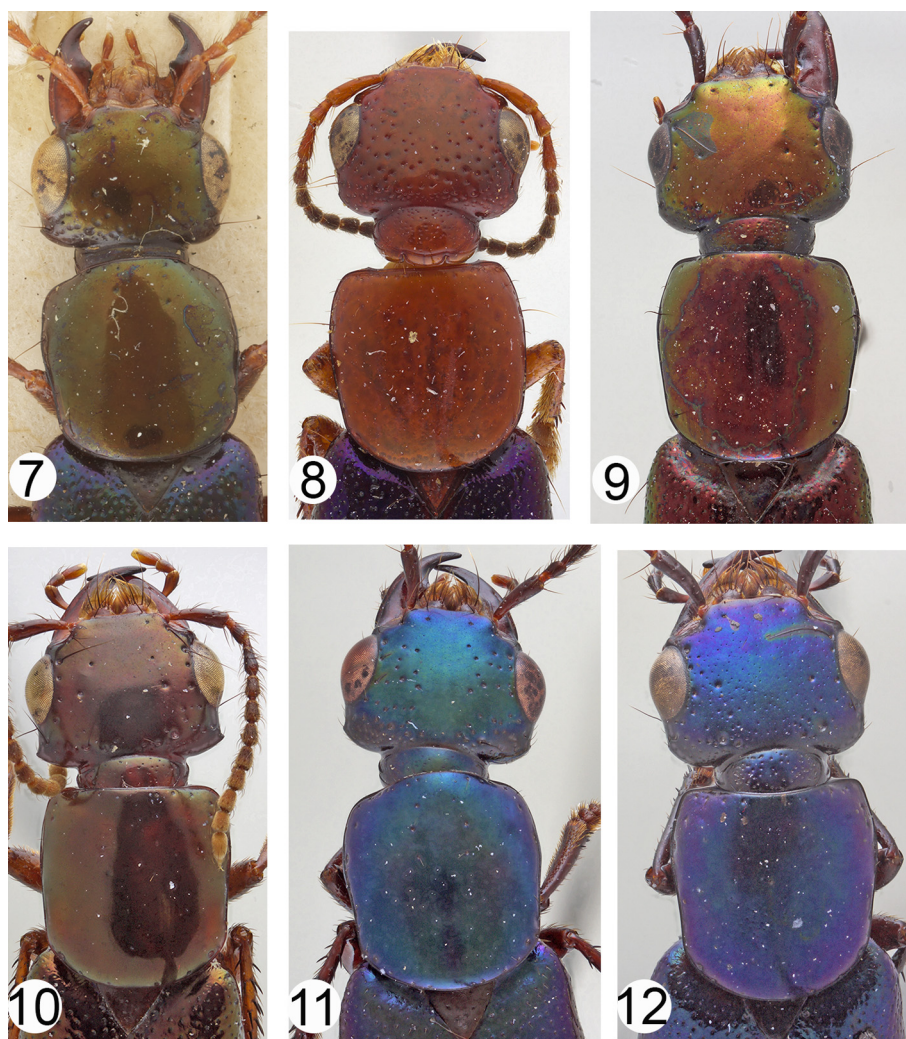
Legs with tarsal segmentation 5-5-5; meso- and metatibia with multiple rows of spurs; protibia without multiple rows of spurs but with single row of spurs apically. Protarsus enlarged in both sexes, with spatulate setae ventrally; meso- and metatarsus not enlarged. Empodium with two small setae.

Abdomen with paired prototergal glands present; abdomen expanding from segment III to segment V (widest) and then becoming narrower towards segment VIII. Abdominal terga III–V with tergal basal and without subbasal (arch-like) carina. Segments with distinctive microsculpture (Figs. 23–24) anteriorly and on anterolateral corners; sterna with deep elongate uniform punctation in multiple rows; terga V–VII with elongate punctures containing microsculpture. Males with secondary sexual structures of sternites VIII–IX; without porose structure on abdominal sternum VII; sternum VIII with emargination posteriorly; sternite IX with U or V-shaped emargination. Lateral tergal sclerites of the abdominal segment IX long and straight, covered with long macrosetae.

Male genitalia with aedeagus typical of Xanthopygina (Figs. 25–42); with median lobe longer and wider than paramere; median lobe with two dorsal teeth; paramere long, not divided into lobes. Paramere with peg setae and short apical setae. Spermatheca not sclerotized.



FIGURES 5–6. Habitus photographs of species of *Phanolinopsis* Scheerpeltz. 5. The holotype of *P. metaksenios* Chatzimanolis, total length = 12.5mm. 6. The holotype of *P. norahae* Chatzimanolis, total length = 13.5mm.



FIGURES 7–12. Heads and pronota of *Phanolinopsis* Scheerpeltz. 7. *P. discedens* (Sharp). 8. *P. erythros* Chatzimanolis. 9. *P. fassli* (Bernhauer). 10. *P. goniakos* Chatzimanolis. 11. *P. metaksenios* Chatzimanolis. 12. *P. norahae* Chatzimanolis. Not to scale.

***Phanolinopsis discedens* (Sharp, 1884)**

(Figs. 1, 7, 13, 19–27, 43)

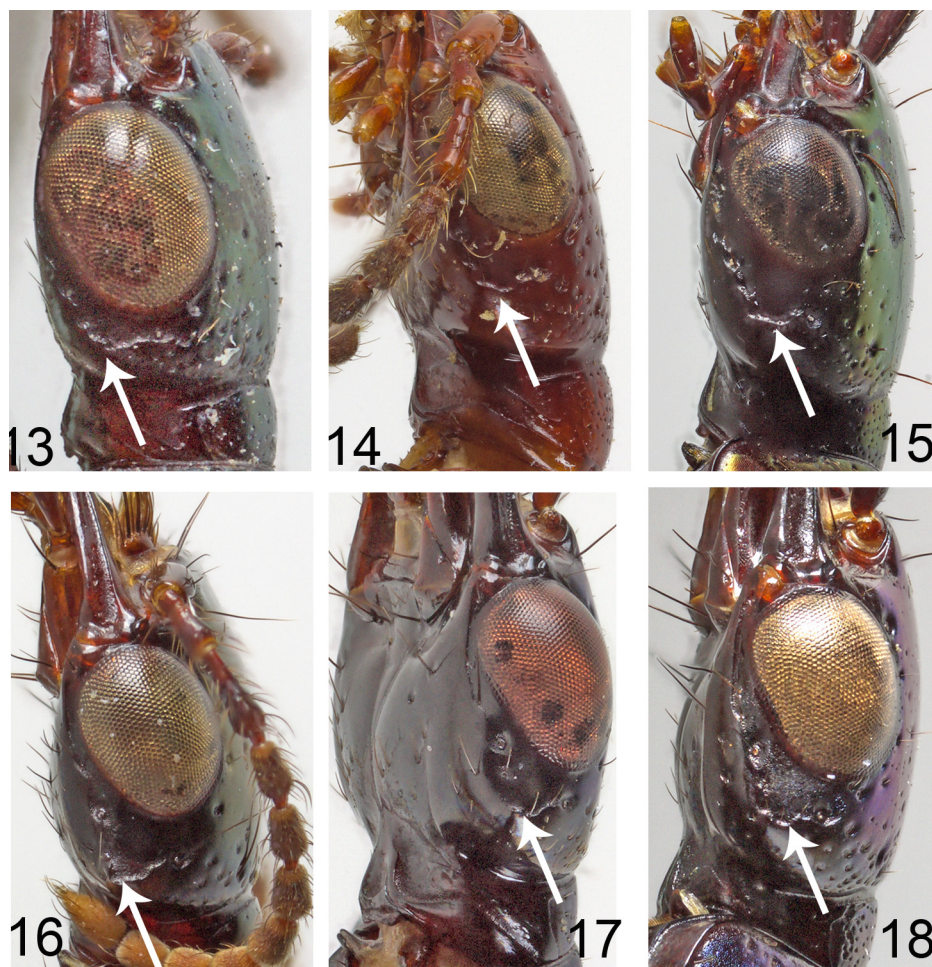
Phanolinus discedens Sharp, 1884: 368.

Phanolinopsis discedens; Scheerpeltz, 1968: 67.

Type material. Holotype, female, on paper card mount in Sharp’s handwriting: “♀ *Phanolinus discedens*, Type, D. S.” / “Type” / “Bugaba, Panama. Champion.” / “B.C.A. Col. I. 2. *Phanolinus discedens*, Sharp” / “Sharp Coll. 1905-313.” / “HOLOTYPE *Phanolinus discedens* Sharp, 1884 det. R.G. Booth 2011”. In the collection of BMNH. Sharp (1884) mentioned that he had a single female specimen, which is the holotype.

Additional Material. COSTA RICA: Puntarenas: Altamira Biological Station, 1510–1600m, 9°01.76’N 83°00.49’W, 4–7.vi.2004, J.S.Ashe, Z. Falin, I. Hinojosa, FIT, CR1AFH04 144, SM0606681, SM0607497, SM0607486 (3 ♂ SEMC); Las Alturas Biological Station, 1660m, 8°56.17’N 82°50.01’W, 31.v.–3.vi.2004, J.S. Ashe, Z. Falin, I. Hinojosa, FIT, CR1AFH04 092, SM0606932, SM0606860 (2 ♂ SEMC); same locality, 1500m, 27.v.1993, J.S & A.K. Ashe, #63, FIT, SM0079878 (1 ♂ SEMC); **PANAMA: Bocas del Toro:** Cerro Pata de Macho Trail, W. of Cerro Horqueta, near Boquete, 8°53’N 82°23’W, 1780m, 10–12.viii.1987, D.M. Olson, #754, lower montaine rainforest, pitfall trap, Field Museum (1 ♂ FMNH); **Chiriquí:** Cerro Pelota, 4km N. Sta. Clara, 1500m, vii.1982, B. Gill (2 ♂ CNC); La Fortuna, Continental Divide Trail, 8°46’N 82°12’W, 1150m, 23.v.–

9.vi.1995, J.S. Ashe, R. Brooks, #155, FIT, SM0007031; SM0079927 (1 ♂ SEMC, 1 ♂ UTCl); same locality, 9.vi.1995, R. Anderson, PAN2A95 10F, Berlese forest litter, SM0035769 (1 ♂ SEMC); La Fortuna, Hydrolog. trail, 8°42'N 82°14'W, 1150m, 23.v.–9.vi.1995, J.S. Ashe, R. Brooks, #156, FIT, SM0003744 (1 ♂ SEMC); same locality and collectors, 1200m, 9–12.vi.1995, #187, FIT, SM0079928 (1 ♀ SEMC); **Unknown Country**: (1 ♂ FMNH).

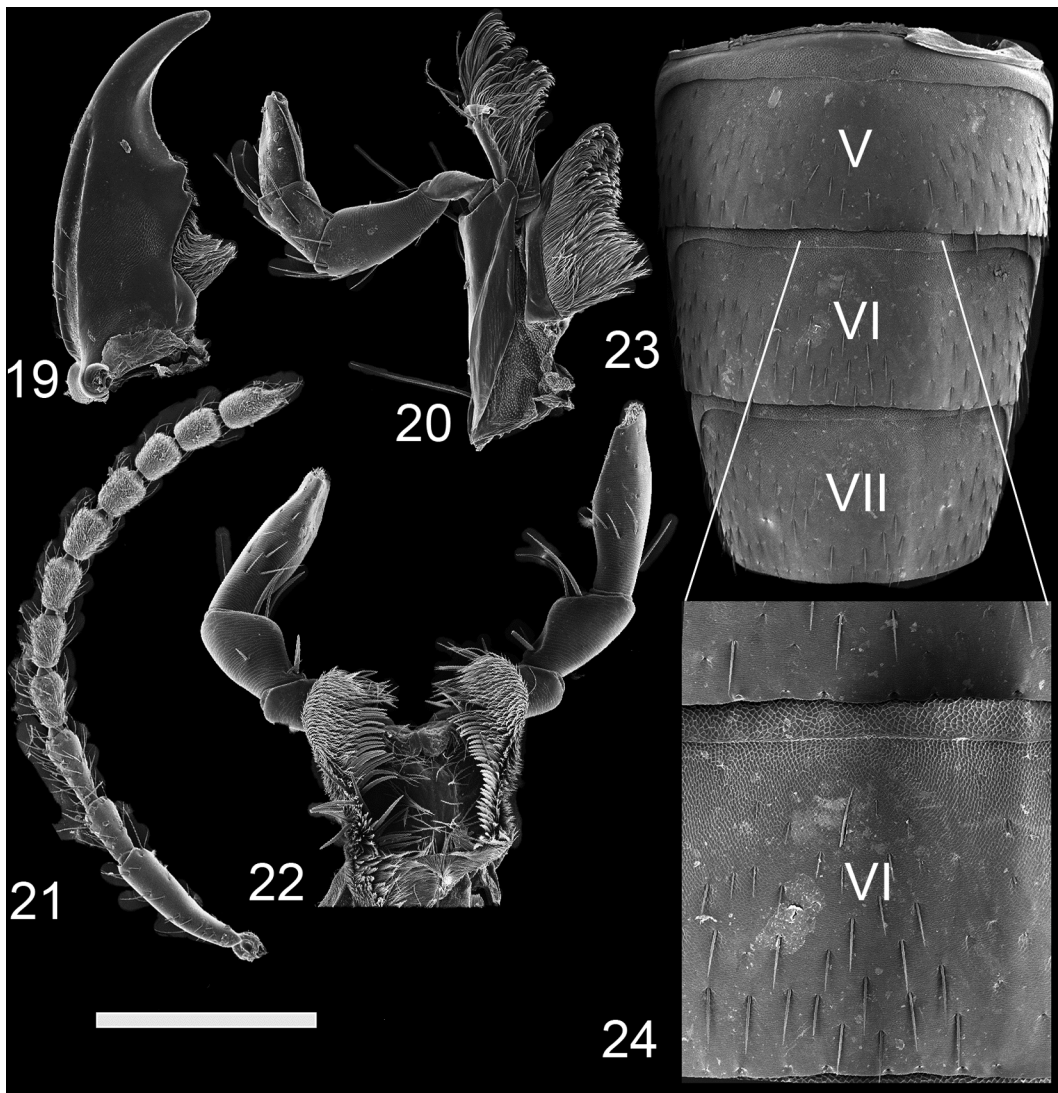


FIGURES 13–18. Lateral view of heads of *Phanolinopsis* Scheerpeltz indicating the differences in the temple area and specifically the distance between the eye and postmandibular ridge. White arrows point to the extent of the postmandibular ridge. 13. *P. discedens* (Sharp). 14. *P. erythros* Chatzimanolis. 15. *P. fassli* (Bernhauer). 16. *P. goniakos* Chatzimanolis. 17. *P. metaksenios* Chatzimanolis. 18. *P. norahae* Chatzimanolis. Not to scale.

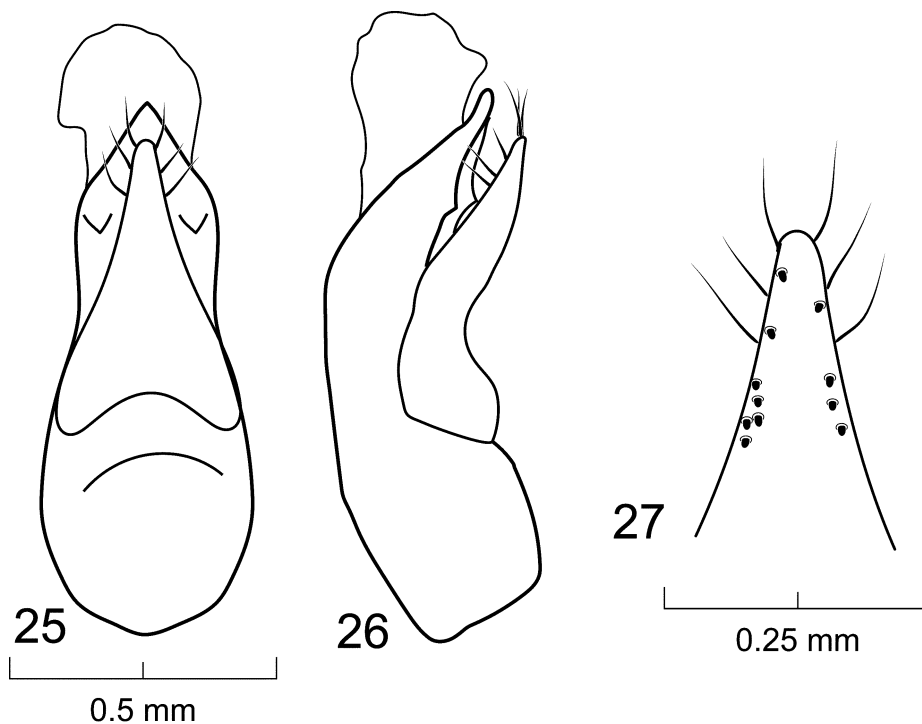
Diagnosis. Among all species of *Phanolinopsis*, *P. discedens* can be diagnosed based on the following characteristics: medium size (9.5–13.2mm); disc of pronotum with four punctures at the center of the pronotum, each one delimiting the corner of a square (few specimens with less punctures); coloration of head and pronotum not red; posterolateral corners of head not extremely pointed; aedeagus as in Figs. 25–27. *Phanolinopsis metaksenios* is sympatric with *P. discedens* through much of their range, but these two species can be distinguished from each other based on their coloration (pronotum and elytra different color in *P. discedens* (Fig. 1); similar color in *P. metaksenios* (Fig. 5)); the distance between the eye and the postmandibular ridge in lateral view (short in *P. discedens* (Fig. 13); long in *P. metaksenios* (Fig. 17)), and the shape of the aedeagus (tip of median lobe pointed and apex of paramere narrow in *P. discedens* (Figs. 25–27); tip of median lobe wider and rounded and apex of paramere wide in *P. metaksenios* (Figs. 37–39)).

Description. Body length 9.5–13.2mm. Head and pronotum metallic green-brown; elytra dark metallic blue-green. Mouthparts, antennae, mesoscutellum, ventral surface of thorax and legs reddish brown. Abdominal terga and sternae reddish brown but with darker areas medially; posterior half of terga slightly lighter color; posterior 1/5 of segment VII and segment VIII orange. Head transverse, width: length ratio = 1.47. Epicranium with transverse

and polygon-shaped microsculpture and sparse micropunctures; with large to medium-sized punctures around margin of head (becoming more numerous near posterior margin), but with no other punctures on epicranium. Eyes large, length of eyes / length of head ratio = 0.66, distance between eyes as wide as 1.44 times length of eye. Area between postmandibular ridge and eye (lateral side of head) narrow, with polygon-shaped microsculpture; posterolateral corner of head not pointed. Antennomeres 1–9, 11 longer than wide; antennomere 10 subquadrate. Neck with micropunctures, microsculpture, and with sparse small punctures. Pronotum subquadrate, width : length ratio = 0.95; surface of pronotum uniformly covered with sparse micropunctures and dense polygon-shaped microsculpture; appearing matte due to microsculpture. Pronotum with few large punctures around margin; disc of pronotum with four large punctures at center, each one delimiting corner of square, but some specimens with three or fewer punctures (at least one puncture present). Elytra with large uniform punctures (about 10 punctures / elytron width); punctures almost confluent. Elytra appearing shiny; with sparse longitudinal microsculpture. Abdominal terga sparsely punctate with small to medium-sized punctures. Male secondary sexual structures with sternum VIII having shallow emargination medially; sternum IX with deep U-shaped emargination medially. Female without obvious sexual structures. Aedeagus as in Figs. 25–27; in dorsal view paramere converging to rounded tip; paramere shorter and narrower (apically) than median lobe; in lateral view paramere straight, narrower apically; paramere with peg setae along the lateral margins from tip to middle. Median lobe in dorsal view wide, converging to pointed apex, with two broad teeth apically; in lateral view becoming much narrower near apex.



FIGURES 19–24. *Phanolinopsis discedens* (Sharp). 19. Dorsal view of right mandible, scale bar = 0.77mm. 20. Left maxilla, scale bar = 0.55mm. 21. Antenna, scale bar = 1mm. 22. Hypopharynx with labial palps, scale bar = 0.36mm. 23. Abdominal sterna V–VII, scale bar = 1.23mm. 24. Magnification of abdominal sternum VI showing the different types of microsculpture, scale bar = 0.58mm.



FIGURES 25–27. Aedeagus of *P. discedens* (Sharp). 25. Dorsal view. 26. Lateral view. 27. Detail of paramere, ventral view.

Distribution. Known from the province of Puntarenas in **Costa Rica** and the provinces of Bocas del Toro and Chiriquí in Panama.

Habitat. Collected with flight intercept traps, pitfall traps and in leaf litter from cloud forests between 1150–1780m.

Remarks. An additional specimen from FMNH can be tentatively included here. The specimen was labeled as “*Trigonopselaphus assmanni*” by Bierig as a manuscript type from San Isidro del Cotou, **Costa Rica**. However, I hesitate to include it above with the other “additional specimens” since the specimen is in bad condition and it is hard to see all the characters.

Phanolinopsis erythros Chatzimanolis, new species

(Figs. 2, 8, 14, 28–30, 43)

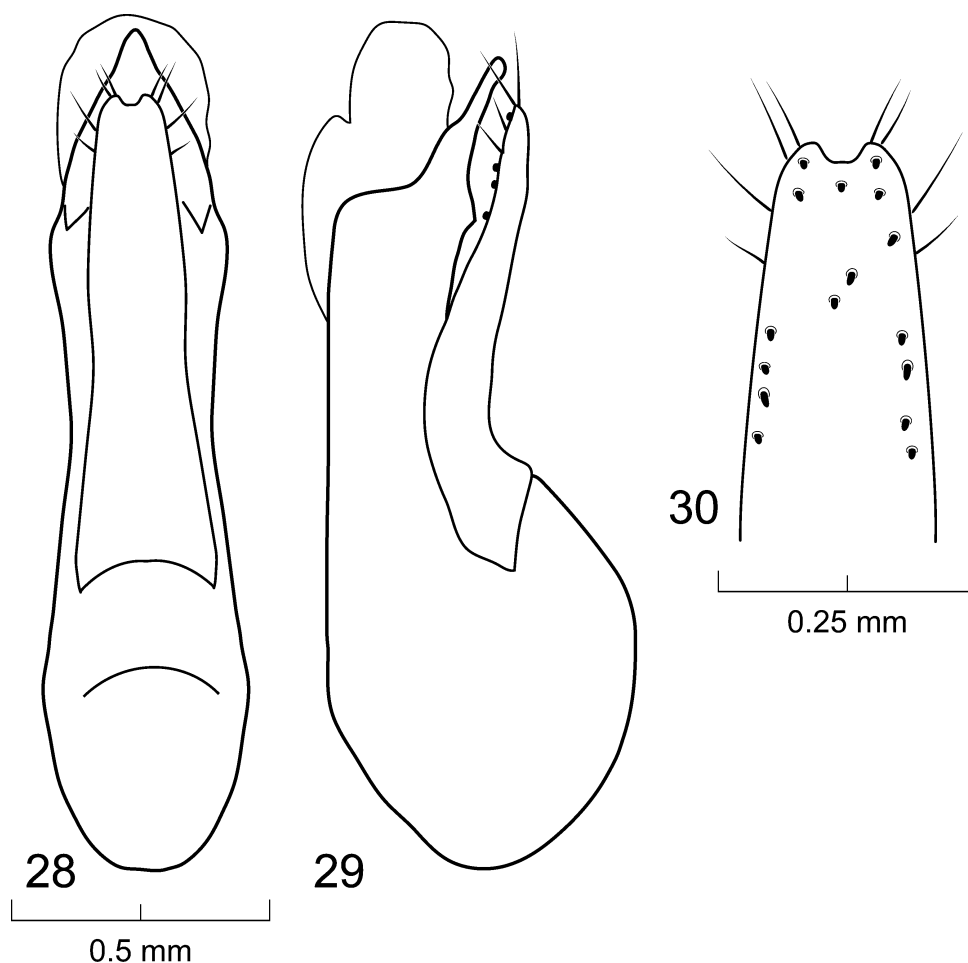
Type material. Holotype, here designated, male, with labels: “Guat.[emala], Chim.[altenango], 5mi. S. Acatenago, 2400m, 2.ix.[19]72, J. Helava” / “*Eugastus bicolor* Shr. Smetana det. 1992” / “New genus? not *Eugastus* det. A. Davies” / “Holotype *Phanolinopsis erythros* Chatzimanolis, des. Chatzimanolis 2017”. In the collection of CNC.

Paratype. One, male, with labels: “Panama, Veraguas Prov., 8km W. Santa Fe, Cerro Tute, el. 3000ft, 8°30’26”N 81°6’49”W, 24–26.vii.1999, malaise, J.B. Woolley 99/057” / “Duplicate ex series at TAMU (3), Field Museum Nat. His.” / “? *Eugastus* det. Newton 2002” / “Paratype *Phanolinopsis erythros* Chatzimanolis, des. Chatzimanolis 2017”. In the collection of FMNH.

Diagnosis. *Phanolinopsis erythros* is easily distinguished from other species of *Phanolinopsis* based on the bright red coloration of the head, pronotum, mesoscutellum, legs, and ventral side of the body. Additionally, the tip of the paramere in dorsal view is emarginate (flat or rounded in other species). This species obviously does not belong in *Philothalpus* Kraatz (the current name for *Eugastus* Sharp), which belongs in a different subtribe, despite the references made above on the labels (see Chatzimanolis & Ashe 2005 and Chani-Posse et al. 2017 for more details on *Philothalpus*).

Description. Body length 13.8–14.2mm. Head and pronotum bright red; elytra dark metallic blue-purple or blue-green. Mesoscutellum red with brown border; mouthparts, ventral surface of thorax and legs red to reddish

brown; antennomeres red but antennomeres 4–11 with darker setae. Abdominal terga and sterna III–IV red; V–VII reddish brown with brown area medially; posterior 1/3 of segment VII and segment VIII orange. Head transverse, width: length ratio = 1.38. Epicranium with mainly transverse and few polygon-shaped microsculpture; with sparse micropunctures; with few large to medium-sized punctures around margin of head; and numerous medium-sized punctures in 3–4 rows from lateral margins to center and from posterior margin to center; center of epicranium impunctate. Eyes medium-sized, length of eyes / length of head ratio = 0.48, distance between eyes as wide as twice length of eye. Area between postmandibular ridge and eye (lateral side of head) wide, with transverse microsculpture; posterolateral corner of head not pointed. Antennomeres 1–11 longer than wide. Neck with micropunctures, microsculpture, and with many small punctures. Pronotum subquadrate, width : length ratio = 0.92; surface of pronotum uniformly covered with sparse micropunctures; appearing shiny. Pronotum with few large punctures around margin; disc of pronotum with four large punctures at center, each one delimiting corner of square. Elytra with large to medium-sized punctures (about 10–11 punctures / elytron width); distance punctures from almost confluent to 0.5 times width of puncture; punctures more clustered together near lateral margins. Elytra appearing shiny; with sparse polygon-shaped microsculpture. Abdominal terga with at least 3–4 rows of medium-sized punctures each. Male secondary sexual structures with sternum VIII having shallow emargination medially; sternum IX with deep U-shaped emargination medially. Females unknown. Aedeagus as in Figs. 28–30; in dorsal view paramere wide, parallel-sided, with emarginate apex; paramere shorter and narrower than median lobe; in lateral view paramere slightly concave; paramere with peg setae as in Fig. 30. Median lobe in dorsal view narrow, converging to pointed apex, with two broad teeth apically; in lateral view becoming narrower and elongate near apex.



FIGURES 28–30. Aedeagus of *P. erythros* Chatzimanolis. 28. Dorsal view. 29. Lateral view. 30. Detail of paramere, ventral view.

Distribution. Known from the department of Chimaltenango in Guatemala and the province of Veraguas in Panama.

Habitat. Collected with malaise traps from elevation between 914–2400m in cloud forests.

Etymology. The specific epithet is derived from the Greek word ερυθρός (red) and refers to the coloration of the head and pronotum. The epithet is treated as a noun in apposition.

***Phanolinopsis fassli* (Bernhauer, 1917), new combination**

(Figs. 3, 9, 15, 31–33, 44)

Trigonopselaphus fassli Bernhauer, 1917: 113.

Phanolinus fassli (Bernhauer); Scheerpeltz, 1933: 1415.

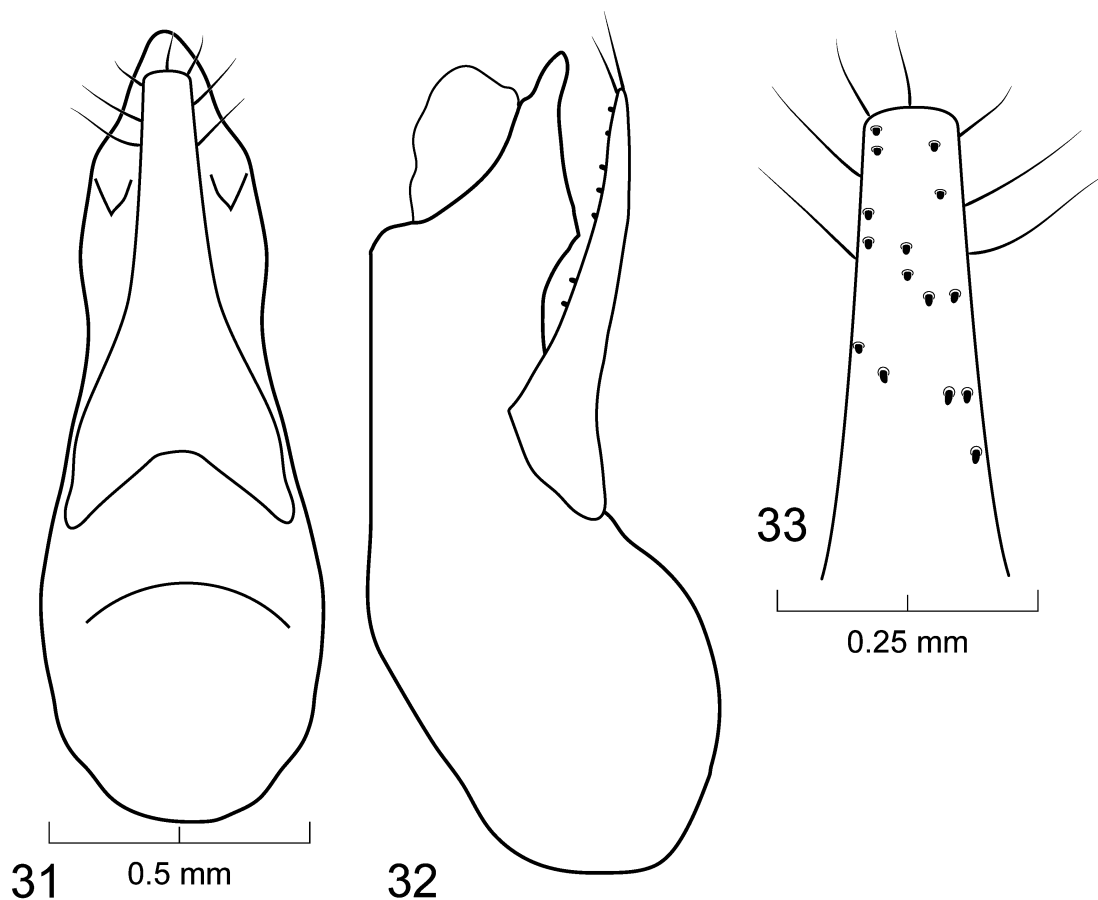
Trigonopselaphus fassli Bernhauer; Scheerpeltz, 1972: 43.

Torobus fassli (Bernhauer); Herman 2001: 29.

Type material. Holotype, female, with labels: “Columbia occ. Cali. Fassl” / “Cañon del Monte Tolima, 1700m, ii-iii.1910” / “fassli Bern. Typus” / “Chicago NHMus, M. Bernhauer Collection” / HOLOTYPE teste A. Westrich 2015 GDI imaging Project” / “PHOTOGRAPHED Kelsey Keaton 2015 Emu Catalog” / “FMNHINS3047816 Field Museum Pinned” / “*Phanolinopsis fassli* (Bernhauer) det. Chatzimanolis 2017”. In the collection of FMNH. Bernhauer (1917) added the following to the locality label on the specimen: “Umgebung von Cali am Cauca”, and mentioned that he had only a single female specimen, which is the holotype.

Additional Material. Unknown Country: Coll. Kraatz (1 ♂ SDEI).

Diagnosis. Among all species of *Phanolinopsis*, *P. fassli* and *P. norahae* are easily distinguished from other species due to the lack of punctures on the disc of the pronotum in these two species. *Phanolinopsis fassli* can be distinguished from *P. norahae* based on the following: head and pronotum with weak micropunctuation (Fig. 9; much starker in *P. norahae*, Fig. 12); reduced microsculpture between eyes and postmandibular ridge (Fig. 15; not reduced in *P. norahae*, Fig. 18); tip of paramere flat (Figs. 31, 33; more rounded in *P. norahae*, Figs. 40, 42). The two species also differ in coloration (Figs. 3, 6).



FIGURES 31–33. Aedeagus of *P. fassli* (Bernhauer). 31. Dorsal view. 32. Lateral view. 33. Detail of paramere, ventral view.

Description. Body length 12.6–14.0mm. Head, pronotum and elytra metallic purple-brown with green overtones. Mouthparts, antennae, mesoscutellum, ventral surface of thorax, legs and abdomen brown. Posterior half of abdominal terga slightly lighter color; posterior 1/4 of segment VII and segment VIII orange. Head transverse, width: length ratio = 1.32. Epicranium with transverse and polygon-shaped microsculpture and sparse micropunctures; with large to medium-sized punctures around margin of head (becoming more numerous near posterior margin), but with no other punctures on epicranium. Eyes medium-sized, length of eyes / length of head ratio = 0.39, distance between eyes as wide as 2.67 times length of eye. Area between postmandibular ridge and eye (lateral side of head) wide, without polygon-shaped microsculpture but with sparse transverse microsculpture; posterolateral corner of head not pointed. Antennomeres 1–8, longer than wide; antennomeres 9–11 missing. Neck with micropunctures, microsculpture, and with dense small punctures. Pronotum subquadrate, width : length ratio = 0.98; surface of pronotum uniformly covered with sparse micropunctures and dense polygon-shaped microsculpture; appearing matte due to microsculpture. Pronotum with few large punctures around margin; disc of pronotum impunctate. Elytra with medium-sized punctures (about 12–13 punctures / elytron width); punctures almost confluent. Elytra appearing shiny; with sparse longitudinal microsculpture. Abdominal terga with 1–2 rows of small punctures. Male secondary sexual structures with sternum VIII having shallow V-shaped emargination medially; sternum IX with deep V-shaped emargination medially. Female without obvious sexual structures. Aedeagus as in Figs. 31–33; in dorsal view paramere converging to flat tip; paramere shorter and narrower (apically) than median lobe; in lateral view paramere concave apically; paramere with peg setae as in Fig. 33. Median lobe in dorsal view wide, converging to rounded apex, with two broad teeth apically; in lateral view becoming narrower near apex.

Distribution. Known from the type locality of west Colombia in the mountainous surrounding of Cali.

Habitat. Unknown, but given the high altitude (1700m), the species is probably found in cloud forests.

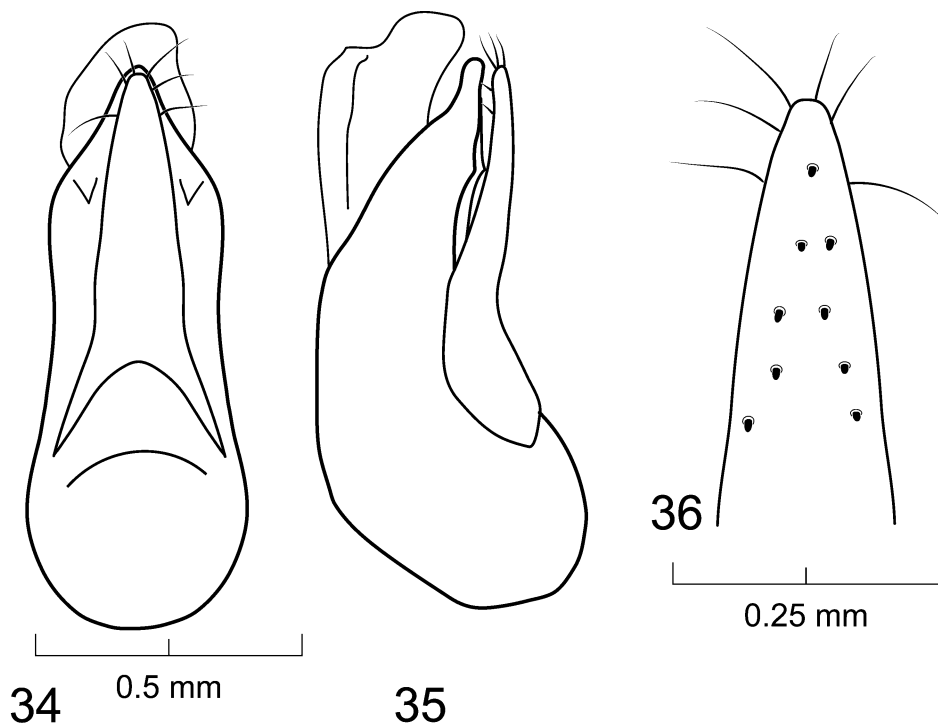
***Phanolinopsis goniakos* Chatzimanolis, new species**

(Figs. 4, 10, 16, 34–36, 43)

Type material. Holotype, here designated, male, with labels: “Costa Rica: Puntarenas, Monteverde, Estacion Biol. Monteverde, 1730m, 10°19'10"N 84°48'57"W, 12.vi.2001, montane forest litter, R. Anderson, CR1A01 107” / “[barcode label] SM0516461” / “Holotype *Phanolinopsis goniakos* Chatzimanolis, des. Chatzimanolis 2017”. In the collection of SEMC.

Paratypes. 45: same label as holotype, SM0516460 (1 ♂ SEMC); “Costa Rica: Puntarenas, Monteverde, Biol. Station, 1540m, 10°19.672'N 84°49.141'W, 10–17.vi.2001, S & J. Peck, 01-09, FIT, cloud forest, CR1P01 001”, barcode label SM0459582 (1 ♂ SEMC); “Costa Rica: Puntarenas, Monteverde, 1570m, 15.v.1989, J.S. Ashe, R. Brooks, R. Leschen, pitfall traps” / “Snow Entomol. Mus. Costa Rica Exped. #205”, barcode labels SM0079890, SM0079896, SM0079886, SM0079905, SM0079897, SM0079906, SM0079885, SM0079887, SM0079889, SM0079899, SM0079900, SM0079901, SM0079895, SM0079888, SM0079893, SM0079894, SM0079891, SM0079892, SM0079903, SM0079904, SM0079902, SM0079898 (1 ♂, 1 ♀ UTCI; 17 ♂, 3 ♀ SEMC); same locality and collectors, 10.v.1989, #101, barcode labels SM0079919, SM0079924, SM0079922, SM0079921, SM0079925, SM0079923, SM0079920 (1 ♂ UTCI; 5 ♂, 1 ♀ SEMC); same locality and collectors, 12.v.1989, #129, barcode labels SM0079910, SM0079911, SM0079909 (3 ♂ SEMC); same locality and collectors, 9.v.1989, #074, barcode labels SM0079908, SM0079907 (1 ♂, 1 ♀ SEMC); same locality and collectors, 23.v.1989, #412, barcode labels SM0079918, SM0079917 (2 ♀ SEMC); same locality and collectors, Chomogo Trail, 1690m, 23.v.1989, #410, barcode labels SM0079915, SM0079912, SM0079914, SM0079913 (2 ♂, 2 ♀ SEMC); same locality, 1520m, 30.iv.1986, J.S. Ashe, leaf litter, barcode label SM0079926 (1 ♂ SEMC); same locality, 5000ft, 23–24.v.1979, J.M. & B.A. Campbell (1 ♂ CNC); “Costa Rica: Guanacaste, Santa Elena, Santa Elena Cloud For. Reserve, 1650m, 10°20'42"N 84°47'53"W, 11.vi.2001, cloud for. litter, R. Anderson, CR1A01 104”, barcode label SM0516591 (1 ♂ SEMC). All paratypes with label “Paratype *Phanolinopsis goniakos* Chatzimanolis, des. Chatzimanolis 2017”.

Diagnosis. This species can be easily distinguished from all other taxa of *Phanolinopsis* based on the morphology of the head. In *P. goniakos* the posterolateral corners of the head are pointed (Figs. 4, 10, 16) more so than any other known species.



FIGURES 34–36. Aedeagus of *P. goniakos* Chatzimanolis. 34. Dorsal view. 35. Lateral view. 36. Detail of paramere, ventral view.

Description. Body length 10.5–13.0mm. Head and pronotum metallic brown, sometimes with green overtones; elytra dark metallic brown-green. Mouthparts, mesoscutellum, ventral surface of thorax and legs brown. Antennomeres 1–6 brown; antennomeres 7–11 dark yellow. Abdominal terga and sterna brown; posterior 1/5 of segment VII and segment VIII orange. Head transverse, width: length ratio = 1.45. Epicranium with transverse and polygon-shaped microsculpture and sparse micropunctures; with large to medium-sized punctures around margin of head (becoming more numerous near posterior margin); with 3–4 other large puncture near center but with no other punctures on epicranium. Eyes medium-sized, length of eyes / length of head ratio = 0.48, distance between eyes as wide as 2.07 times length of eye. Area between postmandibular ridge and eye (lateral side of head) wide, with polygon-shaped microsculpture; posterolateral corner of head pointed. Antennomeres 1–9, 11 longer than wide; antennomere 10 subquadrate. Neck with micropunctures, microsculpture, and with sparse small punctures. Pronotum subquadrate, width : length ratio = 0.98; surface of pronotum uniformly covered with sparse micropunctures and dense polygon-shaped microsculpture; appearing matte due to microsculpture. Pronotum with few large punctures around margin; disc of pronotum with four large punctures at center, each one delimiting corner of square. Elytra with medium-sized punctures (about 8–9 punctures / elytron width); distance between punctures 0.5–1 width of puncture. Elytra appearing shiny; with sparse longitudinal microsculpture. Abdominal terga sparsely punctate with small to medium-sized punctures. Male secondary sexual structures with sternum VIII having shallow emargination medially; sternum IX with deep U-shaped emargination medially. Female without obvious sexual structures. Aedeagus as in Figs. 34–36; in dorsal view paramere converging to rounded tip; paramere about as long as and narrower than median lobe; in lateral view paramere slightly concave apically; paramere with peg setae as in Fig. 36. Median lobe in dorsal view wide, converging to rounded apex, with two broad teeth apically; in lateral view becoming narrower near apex.

Distribution. Known from the provinces of Guanacaste and Puntarenas in **Costa Rica**.

Habitat. Collected with pitfall traps, flight intercept traps and in leaf litter in cloud forests at elevations between 1520–1690m.

Etymology. The specific epithet is derived from the Greek word γωνία (angle) and refers to the sharp angle of the posterolateral corners of the head. The epithet is treated as a noun in apposition.

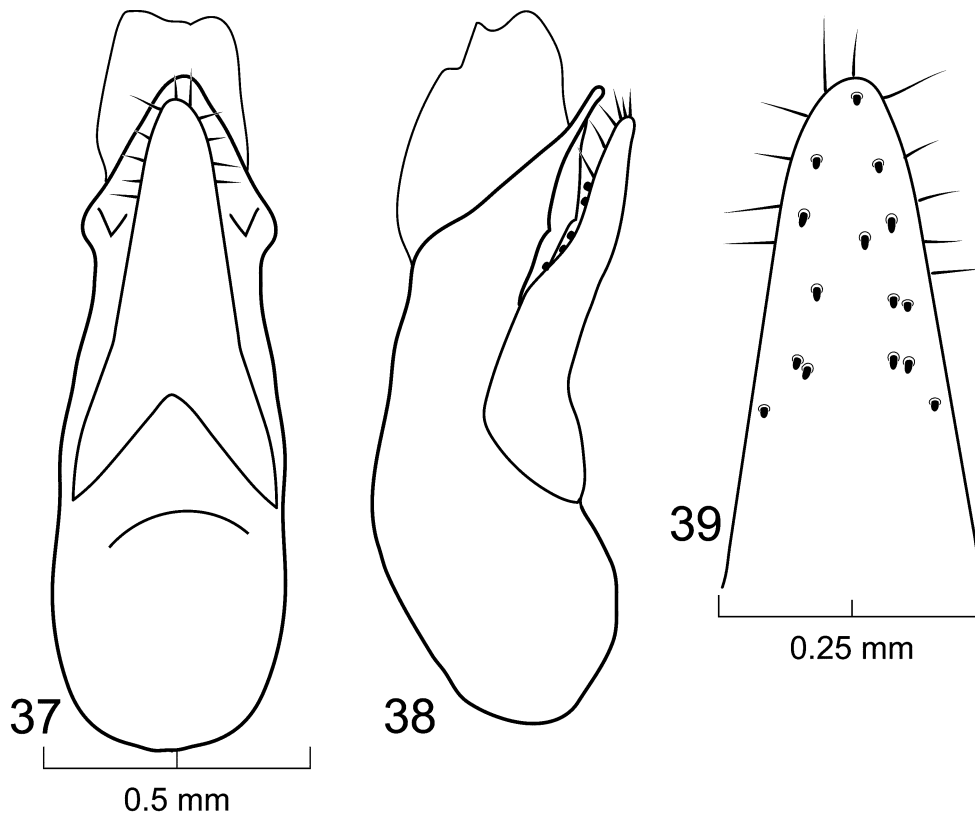
***Phanolinopsis metaksenios* Chatzimanolis, new species**

(Figs. 5, 11, 17, 37–39, 44)

Type material. **Holotype**, here designated, male, with labels: “Costa Rica: Puntarenas, Las Alturas Stanford Bio.[logical] Stn. [Station], 29km NE San Vito, 1500m, 27.v.1993, J.S. & A.K. Ashe, #063, ex: flight intercept trap” / “[barcode label] SM0079937” / Holotype *Phanolinopsis metaksenios* Chatzimanolis, des. Chatzimanolis 2017”. In the collection of SEMC.

Paratypes. 35: “Costa Rica: Heredia, La Selva, 3.2km SE Puerto Viejo, 100m, 21.iii.1992, W. Bell. ex: flight intercept trap”, barcode label SM0079988 (1 ♂ SEMC); same locality and collector, 24.ii.1992, barcode label SM0079939 (1 ♂ SEMC); same locality and collector, 6.iii.1992, barcode label SM0079940 (1 ♂ SEMC); “Costa Rica: Puntarenas Prov., Las Alturas Biol. Sta., 1660m, 8°56.17N 82°50.01W, 31.v.–3.vi.2004, J.S. Ashe, Z. Falin, I. Hinojosa, ex: flight intercept trap, CR1AFH04 092”, barcode labels SM0606976, SM0606985, SM0606873, SM0606871, SM0606931 (2 ♂, 3 ♀ SEMC); “Costa Rica: Puntarenas, San Vito, Estac. Biol. Las Alturas, Alturas, 2km NE, 8°56'56"N 82°50'1"W, 1520m, 20.vi.1998, R. Anderson, CR1A98 104 ex: Berlese leaf litter”, barcode label SM0115543 (1 ♂ SEMC); same locality, x.1991, P. Hanson, barcode label SM0079936 (1 ♂ SEMC); same locality, xii.1991, malaise trap (1 ♂ MAIC); “Costa Rica: Puntarenas Prov., Altamira Biol. Sta., 1510–1600m, 9°01.76'N 83°00.49W, 4–7.vi.2004, J.S.Ashe, Z. Falin, I. Hinojosa, ex: flight intercept trap, CR1AFH04 144”, barcode labels SM0607495, SM0607496 (1 ♂ SEMC; 1 ♂ UTCI); “Costa Rica: Puntarenas, 24km W Piedras Blancas, R. F. Golfo Dulce, 200m, 8°46'0"N 83°24'0"W, 1.viii.–30.ix.1993, CR1H95-96 18, P. Hanson, ex: Malaise trap”, barcode labels SM0134806, SM0134813 (2 ♂ SEMC); same locality and collector, xi.1990, barcode label SM0079877 (1 ♂ SEMC); same locality and collector, xii.1990, barcode label SM0063457 (1 ♀ SEMC); “Costa Rica: Puntarenas Prov., Las Cruces Biol. Sta., 1330m, 8°47.14N 82°57.58'W, 28–31.v.2004, J.S.Ashe, Z. Falin, I. Hinojosa, ex: flight intercept trap, CR1AFH04 060”, barcode label SM0606584 (1 ♂ SEMC); “Costa Rica: [Puntarenas Prov.] San Vito de C. B. [Coto Brus], Las Cruces, vii.1982, 1200m, B. Gill, FIT” (2 ♂ CNC); “Costa Rica, Prov. Puntarenas, P.N. Corcovado, Sector La Leona, Cerro Puma, 100–300m, 17.ix.–5.x.2003, K. Caballero, Tp. Intersección, #6 L_S_267000_518900, #75587”, barcode label INB0003780485 (1 ♂ ZMUC); same locality, 19.vi.–8.vii.2003, M. Moraga, A. Azofeifa, K. Caballero, #74479, barcode labels INB0003736774, INB0003736776 (1 ♂, 1 ♀ ZMUC); “Costa Rica, Prov. Puntarenas, Fca. Cafrosa, Est. Las Mellizas, P.N. Amistad, 1300m, J.C. Saborio, vi–vii.1990, L_S_316100_596100”, barcode label INBIOCRI000673323 (1 ♂ ZMUC); same locality, M. Ramirez, G. Mora, barcode label INBIOCRI000162656 (1 ♀ ZMUC); “Costa Rica: Puntarenas Prov., Hacienda La Amistad, 8°56.395'N 82°47.465'W, 1500m, premont. moist forest, FIT, 9–11.vi.2012, Solodovnikov, Brunke, Puliafico, Selvantharan” / “Chatzimanolis DNA Voucher, extraction: SC-406, species: *Phanolinopsis*, extraction date: 27.iii.2015” (1 ♂ ZMUC); “Costa Rica, Prov. Puntarenas, Peninsula de Osa, Rancho Quemado, 200m, 12–24.v.1993, A. Gutiérrez, L_S_292500_511000”, barcode label INBIOCRI000188826 (1 ♂ ZMUC); same locality, xi.1992, F. Quesada, barcode label INBIOCRI000917070 (1 ♀ ZMUC); “Costa Rica [Cartago], Carpintera, 6.viii.1941” / “Field Mus. Nat. Hist. 1966 A. Bierig. Collen. Acc. Z-13812 (1 ♀ FMNH); same labels except 29.i.1939 (1 ♀ FMNH); same labels except 19.iv.1940 (1 ♀ FMNH); same labels except 8.iv.[19]39, “Trigonopselaphus gymnus Brg [manuscript name by A. Bierig] (1 ♂ FMNH); “Panama: Chiriqui Prov., 27.7km W. Volcan, Hartmann’s Finca, 8°45'N 82°48'W, 1450m, 16.vi.1995, J. Ashe, R. Brooks, #230”, barcode label SM0058244 (1 ♀ SEMC); “Panama: Chiriqui, Cerro Pelota, 4km N. Sta. Clara, 1500m, vii.1982, B. Gill (1 ♂, 1 ♀ CNC). All paratypes with label “Paratype *Phanolinopsis metaksenios* Chatzimanolis, des. Chatzimanolis 2017”.

Diagnosis. Among all species of *Phanolinopsis*, *P. metaksenios* can be identified based on the following characteristics: large size (11.0–15.5mm); disc of pronotum with four punctures at the center of the pronotum, each one delimiting the corner of a square (few specimens with five punctures); coloration of head and pronotum not red; posterolateral corners of head not extremely pointed; aedeagus as in Figs. 37–39. *Phanolinopsis metaksenios* is sympatric with *P. discedens* through much of their range, but these two species can be distinguished from each other based on their coloration (pronotum and elytra different color in *P. discedens* (Fig. 1); similar color in *P. metaksenios* (Fig. 5)); the distance between the eye and the postmandibular ridge in lateral view (short in *P. discedens* (Fig. 13); long in *P. metaksenios* (Fig. 17)) and the shape of the aedeagus (tip of median lobe pointed and apex of paramere narrow in *P. discedens* (Figs. 25–27); tip of median lobe wider and rounded and apex of paramere wide in *P. metaksenios* (Figs. 37–39)).



FIGURES 37–39. Aedeagus of *P. metaksenios* Chatzimanolis. 37. Dorsal view. 38. Lateral view. 39. Detail of paramere, ventral view.

Description. Body length 11.0–15.5mm. Head and pronotum metallic green-blue; elytra dark metallic blue with purple overtones. Mouthparts, antennae, mesoscutellum, ventral surface of thorax and legs brown and most of abdomen brown. Abdominal segment VII with variable coloration, either completely dark orange or brown with posterior 1/3 orange; segment VIII orange. Head transverse, width: length ratio = 1.44. Epicranium with transverse and polygon-shaped microsculpture and sparse micropunctures; with large to medium-sized punctures around margin of head (becoming more numerous near posterior margin); with numerous medium-sized punctures in 3–4 rows from lateral margins to center; center of epicranium impunctate. Eyes large, length of eyes / length of head ratio = 0.59, distance between eyes as wide as 1.65 times length of eye. Area between postmandibular ridge and eye (lateral side of head) wide, with polygon-shaped microsculpture; posterolateral corner of head not pointed. Antennomeres 1–9, 11 longer than wide; antennomere 10 subquadrate. Neck with micropunctures, microsculpture, and with sparse small punctures. Pronotum slightly longer than wide, width : length ratio = 0.88; surface of pronotum uniformly covered with sparse micropunctures and dense rectangular-shaped microsculpture; appearing matte due to microsculpture. Pronotum with few large punctures around margin; disc of pronotum with four large punctures at center, each one delimiting corner of square; few specimens with five punctures. Elytra with medium-sized punctures (about 10–11 punctures / elytron width); distance between punctures from confluent to 0.5 times width of puncture. Elytra appearing shiny; with sparse longitudinal and polygon-shaped microsculpture. Abdominal terga with 2–3 rows of small punctures. Male secondary sexual structures with sternum VIII having shallow emargination medially; sternum IX with deep U-shaped emargination medially. Female without obvious sexual structures. Aedeagus as in Figs. 37–39; in dorsal view paramere converging to rounded tip; paramere slightly shorter and narrower than median lobe; in lateral view paramere slightly concave apically; paramere with peg setae as in Fig. 39. Median lobe in dorsal view wide, converging to rounded apex, with two broad teeth apically; in lateral view becoming narrow and elongate near apex.

Distribution. Known from the provinces of Heredia and Puntarenas in Costa Rica and the province of Chiriquí in Panama.

Habitat. Collected with flight intercept traps, malaise traps and in leaf litter at elevations between 100–1600m at lowland and cloud rainforests.

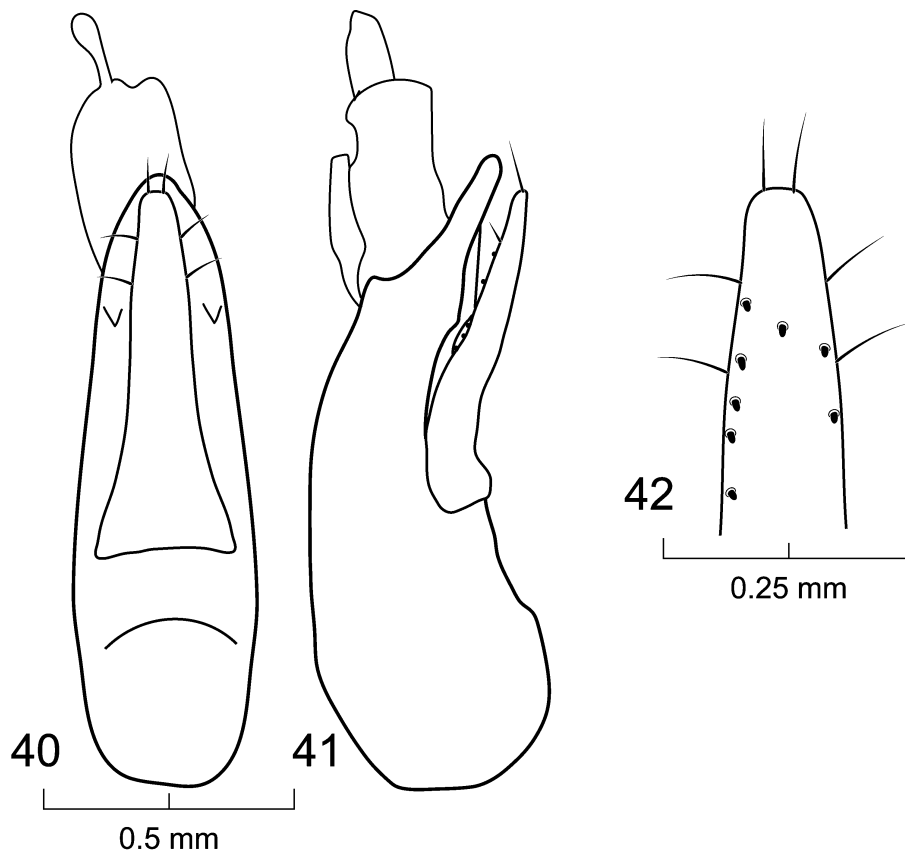
Etymology. The specific epithet is derived from the Greek word μετάξι (silk) and refers to the silky appearance of the head and pronotum. The epithet is treated as a noun in apposition.

***Phanolinopsis norahae* Chatzimanolis, new species**

(Figs. 6, 12, 18, 40–42, 44)

Type material. Holotype, here designated, male with labels: “Colombia, Nariño, R. N. La Planada vía Hondón, 1°15’N 78°15’W, 1930m, pitfall, 16–18.viii.2000, G. Oliva leg., M 1025” / “[barcode label] SM0548892” / “Holotype *Phanolinopsis norahae* Chatzimanolis, des. Chatzimanolis 2017”. In the collection of SEMC.

Paratypes. Seven: “Colombia, Nariño, R. N. La Planada Parcela Permanente, 1°15’N 78°15’W, 1885m, malaise, 14–29.ii.2004, G. Oliva leg., M 4353” / “[barcode label] SM0349446” (1♂ SEMC); “Colombia, Nariño, R. N. La Planada Centro Administrativo, 1°15’N 78°15’W, 1700m, red, 9–12.viii.2004, D. Arias leg., M 4901” / “[barcode label] SM0349447” (1♂ SEMC); “Colombia, Nariño, R. N. La Planada Parcela Olga, 1°15’N 78°15’W, 1850m, malaise, 29.i.–14.ii.2004, G. Oliva leg., M 4356” / “[barcode label] UTCI000006014” (1♂ UTCI); “Ecuador, Pichincha, 45km NWW Quito, Macquipucuna Station, 1600–1650m, 3–18.iv.1996, ECU1H96 012, P. Hibbs, ex: flight intercept trap” / “[barcode label] SM0089851” (1♂ SEMC); same locality and collector, 18.v.–5.vi.1996, ECU1H96 022, barcode label SM0092764 (1♀ SEMC); “Ecuador, Pichincha, Macquipucuna For. Res., 50km NW Quito, 1750m, 23.xii.1991, C. Carlton, R. Leschen. #62, ex: flight intercept trap” / “[barcode label] SM0079941” (1♂ SEMC); “Ecuador, Pichincha, Macquipucuna Biological Station, 0°5’34”N 78°37’37”W, 1600m, 29.x.1999, R. Anderson, ECU1A99 214D, ex: ridge-top montane forest litter, mixed *Cecropia*/cloud forest” / “[barcode label] SM0366942” (1♀ SEMC). All paratypes with label “Paratype *Phanolinopsis norahae* Chatzimanolis, des. Chatzimanolis 2017”.



FIGURES 40–42. Aedeagus of *P. norahae* Chatzimanolis. 40. Dorsal view. 41. Lateral view. 42. Detail of paramere, ventral view.

Diagnosis. Among all species of *Phanolinopsis*, *P. fassli* and *P. norahae* are easily distinguished from other species due to the lack of punctures on the disc of the pronotum. *Phanolinopsis norahae* can be distinguished from *P. fassli* based on the following: head and pronotum with stark micropunctuation (Fig. 12; much weaker in *P. fassli*, Fig. 9); dense microsculpture between eyes and postmandibular ridge (Fig. 18; reduced in *P. fassli*, Fig. 15); tip of paramere rounded (Figs. 40, 42; flatter in *P. fassli*, Figs. 31, 33). The two species also differ in coloration (Figs. 3, 6).

Description. Body length 13.0–15.7mm. Head, pronotum and elytra dark metallic blue or green with purple overtones. Mouthparts, mesoscutellum, ventral surface of thorax and legs brown. Antennomeres 1–8 brown; antennomeres 9–11 light brown. Abdominal terga and sterna brown; posterior 1/5 of segment VII and segment VIII orange. Head transverse, width: length ratio = 1.37. Epicranium with transverse and polygon-shaped microsculpture and dense micropunctures; with large to medium-sized punctures around margin of head (becoming more numerous near posterior margin); with numerous medium-sized punctures in 2–3 rows from lateral margins to center; center of epicranium impunctate. Eyes medium-sized, length of eyes / length of head ratio = 0.48, distance between eyes as wide as 1.44 times length of eye. Area between postmandibular ridge and eye (lateral side of head) wide, with stark polygon-shaped microsculpture; posterolateral corner of head not pointed. Antennomeres 1–9, 11 longer than wide; antennomere 10 subquadrate. Neck with micropunctures, microsculpture, and with dense small punctures. Pronotum subquadrate, width : length ratio = 0.94; surface of pronotum uniformly covered with dense micropunctures and dense polygon-shaped microsculpture; appearing matte due to microsculpture. Pronotum with few large punctures around margin; disc of pronotum impunctate. Elytra with medium-sized punctures (about 11–12 punctures / elytron width); distance between punctures from confluent to 0.5 times width of puncture. Elytra appearing shiny; with sparse longitudinal microsculpture. Abdominal terga with 1–2 rows of small punctures. Male secondary sexual structures with sternum VIII having shallow emargination medially; sternum IX with deep U-shaped emargination medially. Female without obvious sexual structures. Aedeagus as in Figs. 40–42; in dorsal view paramere parallel-sided, converging to rounded tip; paramere slightly shorter and narrower than median lobe; in lateral view paramere slightly concave apically; paramere with peg setae as in Fig. 42. Median lobe in dorsal view narrow, converging to rounded apex, with two broad teeth apically; in lateral view becoming narrow and elongate near apex.

Distribution. Known from the department of Nariño in Colombia and the province of Pichincha in Ecuador.

Habitat. Collected with flight intercept, malaise and pitfall traps at elevations between 1600–1930m in cloud forests.

Etymology. The specific epithet is in honor of my daughter, Norah Chatzimanolis, who really likes blue beetles.

Key to the species of *Phanolinopsis* Scheerpeltz

1. Head and pronotum with bright red coloration (Figs. 2, 8); aedeagus with tip of paramere emarginate in dorsal view (Figs. 28, 30) *P. erythros*
- Head and pronotum not bright red (Figs. 1, 3–7, 9–12); aedeagus with tip of paramere flat or rounded in dorsal view (Figs. 25, 31, 34, 37, 40) 2
2. Posterolateral corners of head pointed (Figs. 4, 10, 16) *P. goniakos*
- Posterolateral corners of head not pointed (Figs. 1–3, 5–9, 11–15, 17–18) 3
3. Pronotum disc impunctate (excluding micropunctures) 4
- Pronotum disc with four punctures at the center of the pronotum, each one delimiting the corner of a square (some specimens with five punctures or less than four) 5
4. Head and pronotum with weak micropunctuation (Fig. 9); reduced microsculpture between eyes and postmandibular ridge (Fig. 15); tip of paramere flat (Figs. 31, 33) *P. fassli*
- Head and pronotum with stark micropunctuation (Fig. 12); with dense microsculpture between eyes and postmandibular ridge (Fig. 18); tip of paramere rounded (Figs. 40, 42) *P. norahae*
5. Distance between eye and postmandibular ridge in lateral view short (Fig. 13); pronotum and elytra of different color (Fig. 1); tip of median lobe pointed and apex of paramere narrow (Figs. 25–27) *P. discedens*
- Distance between eye and postmandibular ridge in lateral view long (Fig. 17); pronotum and elytra of similar color (Fig. 5); tip of median lobe wider and rounded and apex of paramere wide (Figs. 37–39) *P. metaksenios*

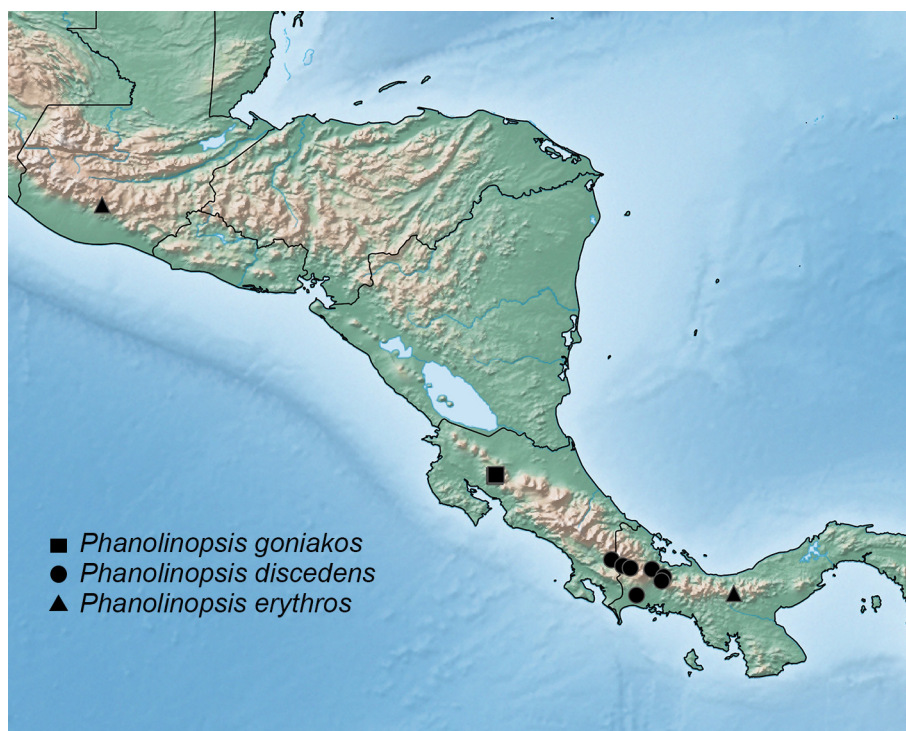


FIGURE 43. Distribution map of *P. discedens* (Sharp), *P. erythros* Chatzimanolis and *P. goniakos* Chatzimanolis.



FIGURE 44. Distribution map of *P. fassli* (Bernhauer), *P. metaksenios* Chatzimanolis and *P. norahae* Chatzimanolis.

Acknowledgements

I sincerely thank the curators and collection managers listed in the Materials and Methods sections for allowing me access to their collections. The Natural History Museum of London allowed me to photograph the holotype of *P. discedens* (Sharp) (Figs. 1, 7), they retain the copyright of the photographs.

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