

Two new additions to the genus *Metapocyrtus* Heller, 1912 (Curculionidae, Entiminae, Pachyrhynchini) from Eastern Visayas and Eastern Mindanao, Philippines with notes on pattern and color variations of *Metapocyrtus kuehli* Cabras, Villanueva, Medina, 2020 and *Metapocyrtus dagtum* Cabras, Torrejos, & Medina, 2021

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Two weevils from the genus *Metapocyrtus* Heller, 1912 namely *M. jabelagbasi* Agbas, Obrial, Barševskis and Cabras sp. nov. and *M. ateriaagbasae* Agbas, Obrial, & Cabras sp. nov. are described and are illustrated from Eastern Visayas and eastern Mindanao. Holotypes and paratypes are deposited at the Philippine National Museum of Natural History (Manila Philippines). Notes on pattern and color variations of *M. kuehli* Cabras, Villanueva, Medina, 2020 and *M. dagtum* Cabras, Torrejos, Medina, 2021 are also discussed.

Keywords: Eastern Mindanao, Eastern Samar, endemic, weevils

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INTRODUCTION

Metapocyrtus Heller, 1912 is a non-monophyletic (Van Dam et al., 2021), complex, and specious genus comprising more than 260 described species distributed all over the Philippines (Obrial et al., 2024; Cabras et al., 2024a; Cabras et al., 2021b). This genus is endemic in the country (Cabras et al. 2018; Bollino et al. 2020) and is the most diverse and complex member of the tribe Pachyrhynchini, which currently contains 18 known genera, having over 500 described species and with a wide range of distribution from the Philippines to Papua New Guinea, Taiwan, Japan, Australia, and Indonesia (Cabras and Medina 2021; Schönherr, 1826; Alonso-Zarazaga and Lyal 1999). The tribes' center of diversity is the Philippines which is currently represented by 12 genera (Cabras et al., 2024b). Due to their wingless nature, most Pachyrhynchine weevils have a very narrow geographic range and are mostly endemic to a mountain or an island (Cabras et al., 2021b). Northern Samar on the other hand, is one of the six provinces found in Eastern Visayas Region with a total number of 24 municipalities (Ebdane, 2019), and is part of the greater Mindanao Pleistocene Aggregate Island Complex (PAIC), where the island in general, is one of the less explored islands in the Philippines (Rukmane-Barbale and

Cabras, 2021) especially for weevils in the tribe Pachyrhynchini. On another note, Eastern Mindanao, particularly Eastern Mindanao Biodiversity Corridor (EMBC) is a long stretch of lowland and mid to high elevation forests along the east coast of Mindanao, marking Dinagat Islands as the northernmost boundary and Mt. Hamiguitan as its southern tip (Ibanez, 2015). The species described in this paper are from the collection of the third and the senior authors.

he genus *Metapocyrtus* Heller 1912, belonging to the tribe Pachyrhynchini Schönherr 1826, is the most diverse and complex endemic member of the tribe, with more than 200 described species. The tribe Pachyrhynchini contains 18 genera with more than 500 described species distributed from the Philippines to Papua New Guinea, Australia, Taiwan, Japan and Indonesia (Schönherr 1826, Alonso-Zarazaga and Lyal 1999) he genus *Metapocyrtus* Heller 1912, belonging to the tribe Pachyrhynchini Schönherr 1826, is the most diverse and complex endemic member of the tribe, with more than 200

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MATERIALS AND METHODS

Morphological characters were observed under Leica, Luxeo 4D and Nikon SMZ745T stereomicroscopes. The treatment of the genitals followed the protocol of Yoshitake (2011). Images of the habitus were taken using Canon EOS 6D digital camera equipped with an MP-E 65-mm macro lens. Images were stacked and processed using a licensed version of Helicon Focus 6.7.0, then contrast adjusted in Photoshop CS6 Portable software. Label data are indicated verbatim.

Abbreviations and symbols mentioned are abbreviated as follows:

/ different lines;

// different labels;

LB body length, from the apical margin of pronotum to the apex of elytra;

LR length of rostrum;

LP pronotal length, from the base to apex along the midline;

LE elytral length, from the level of the basal margins to the apex of elytra;

WR maximum width across the rostrum;

WP maximum width across the pronotum;

WE maximum width across the elytra.

Comparative materials and specimens used in the study are deposited in the following institutional collections:

CNM – Canada Museum of Nature, Ottawa, Canada.

CASENT – California Academy of Sciences Entomology Collection

DGC – Daven and Graden private collection, City of Mati, Philippines

DUBC – Daugavpils University Beetle Collection, Daugavpils, Latvia

PNM – National Museum of Natural History (PNMNH) under the National Museum of the Philippines;

MMCP – Milton Medina Collections, Tagum City Philippines.

SMTD – Senckenberg Natural History Collections, Dresden, Germany

UMCRC – University of Mindanao Coleoptera Research Center, Davao City, Philippines

TAXONOMY

Metapocyrtus jabelagbasi Agbas, Obrial, Barševskis, & Cabras sp. nov.
(Fig. 1 A–B)

Holotype (Fig 1, A and C), 1♂: Philippines – Visayas Island, Samar, Municipality of Lope De Vega/ August 2016 / Local collector leg.. Prof. Barševskis Collection (typed on white card) // HOLOTYPE ♂ / *Metapocyrtus jabelagbasi* / Agbas, Obrial, Barševskis & Cabras sp. nov. (typed on red card)” (Presently at DGC, to be deposited at PNM. **Paratypes** (3 ♂♂); Same data with the Holotype; 1 ♂♂, deposited in DGC; 1 ♂, to be deposited in DUBC. All paratypes with additional yellow labels.

Diagnosis. *Metapocyrtus jabelagbasi* Agbas, Obrial, Barševskis, Cabras sp. nov. is closely related to *Metapocyrtus bulusanus* Heller, 1929 (Type locality: Luzon, Sorsogon, Mt. Bulusan), but differs due to the following characteristics: Head of *M. jabelagbasi* Agbas, Obrial, Barševskis, Cabras sp. nov. dorsal view, weakly rugose with sparse shallow punctures (vs. no prominent projections in *M. bulusanus*) (Fig 3). Prothorax of *M. jabelagbasi* Agbas, Obrial, Barševskis, Cabras sp. nov. in dorsal view, subrectangular, wider than long (vs. subglobular in *M. bulusanus*). Elytra, widely sub-ovate (vs. ovate in *M. bulusanus*); Lateral contour in dorsal view, weakly and unevenly arcuate (vs. broadly and almost evenly arcuate in *M. bulusanus*). Elytra as viewed laterally, uniformly tapered apicad, subacute at apex, with a gradual apical declivity (vs. prominent sparse punctures, wider in length, almost abrupt preapical declivity, uneven apicad in *M. bulusanus*); Lateral margin at apical two-thirds of apical half, with less visible thin sparse short white setae posteriorly (vs. visible setae headed towards apex in *M. bulusanus*). Further, *M. bulusanus* is prominently hairy than *M. jabelagbasi* Agbas, Obrial, Barševskis, Cabras sp. nov. (Fig. 2).

Description. Dimensions: LB: 11.0mm-12.5mm (holotype 12.5mm). LR: 2.4mm-2.5mm (holotype 2.5mm). WR: 1.5mm-1.8mm (holotype 1.8mm). LP: 4.0mm. WP: 4.5-4.8mm (HT 4.8 mm). LE: 7.0mm-7.5mm (HT 7.5mm). WE: 5.5mm-6.0 mm (holotype 6.0mm). N=3.

Integument black. Body surface, rostrum, head, and underside moderately shiny.

Head, dorsal surface between eyes, coarsely punctate, weakly depressed with a distinct median ridge; lateroventral side below the eyes, with scaly patch of tessellated, iridescent pale yellow-greenish round scales, interspersed with yellow subappressed piliform scales directed

ventrally; Eyes medium-sized, weakly convex. Rostrum longer than wide (LR/WR: 2.5mm/1.8 mm), coarsely rugopunctate; Transverse basal groove separating head and rostrum deep, reaching lateral margin; Dorsum with distinct median furrow from base of basal half up to apical third of basal half; Dorsum with subrectangular depression slowly, broadly raised towards basal third of apical half, flat at apical two-thirds of apical half, abruptly declined at apical third. Antenna, scape and funicle, subequal in length. Scape, viewed dorsally, reaches the hind margin of eyes, sparsely covered with adpressed brown setae at lateral ends; Funicles with suberect brownish setae. Funicular segment I nearly as long as II, segment III slightly longer than wide, segments IV -VI, as long as wide and slightly wider than segment III; segment VII slightly longer and wider than segments IV-VI, club sub-ellipsoidal. Prothorax subrectangular, broadly truncate at base, wider than long (LP/WP: 4.0 mm/4.8 mm); Dorsum with sparse, large shallow punctures and weakly rugose subbasally; Widest at middle, weakly broadly convex lateral profile in dorsal view. Prothorax with following scaly markings of appressed iridescent pale-yellow round scales with orange sheen: a) one short longitudinal stripe at middle, b) two thick subparallel stripes on each side, c) one thin stripe along apical margin, discontinuous at lateral side, d). one small subovate scaly patch just above lateral margin near base, and e) one wide subovate scaly patch along lateral margin subbasally. Elytra ovate (LE/WE: 7.0 mm/6.0 mm), longer than wide, more than twice longer and wider than prothorax (WE/WP: 6.0mm/4.8mm, LE/LP: 7.0mm/4.0mm), striate punctate near suture, punctures become irregular towards dorsolateral sides; Lateral contour in dorsal view, weakly convex with gradual apical declivity; Dorsal contour in lateral view, evenly arcuate, uniformly tapered apicad, widest at middle, apex subacute with sparse short sub erect

setae. Each elytron with following scaly markings of iridescent turquoise appressed round scales with pale yellow to orange sheen: a) near basal margin, one short suboblongate scaly patch, subdorsally discontinuous with b) a widened stripe along basal margin of elytron that is uniformly narrowed along lateral margin, c) one scaly band medially just before suture gradually

narrowly extends up to lateral side, discontinuous with the scaly stripe along lateral margin, and d) two, longitudinal short scaly stripes at apical declivity, one near suture confluent with the scaly stripe along lateral margin, one subconfluent with the scaly stripe along lateral margin subparallel with the short stripe near suture.

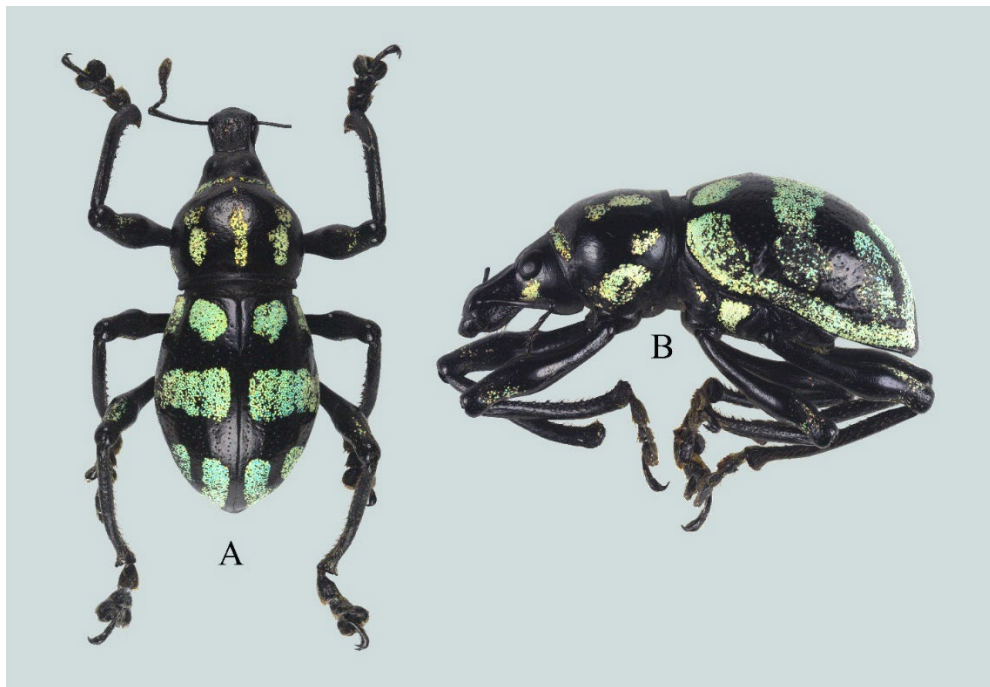


Figure 1. Habitus of *Metapocyrtus jabelagbasi* Agbas, Obrial, Barševskis, Cabras sp. nov. A– ♂ holotype, dorsal view. B – idem, lateral view.

Legs with moderately clavate femora. Femora, black covered with following sparse, iridescent, round to lacrimiform turquoise scales interspersed with pale-yellow to greenish adpressed piliform scales: a) few on dorsal surface near apex of pro femora b) absent on dorsal surface of meso femora, and c) sparse on outer edge of meta femora. Fore and meso tibiae covered with subadpressed brownish setae, inner edge with suberect brownish setae, and denticulate. Hind tibiae, covered with sparse yellowish setae and with notably small denticules. Fore and mid tibiae

mucronate at apex. Tarsomeres with sparse adpressed greenish piliform scales and suberect brown setae. Coxae covered with sparse, pale yellow, adpressed to erect piliform scales; Pro coxae with a few iridescent green, subelliptical scales with orange sheen and sparse, minute adpressed setae. Mesothorax with few punctures and a few tessellated, round, iridescent orange scales. Metathorax, with tessellated iridescent pale-yellow scales with orange to

greenish sheen. Mesoventrite, few sparse iridescent pale-yellow round scales, interspersed with adpressed pale yellow piliform scales. Metaventrite and Ventrite I, weakly rugose, with sparse adpressed pale-yellow piliform scales; Ventrite I, weakly depressed at base and rugose subapically with sparse, brownish suberect setae.

Ventrite II with sparse, brownish, suberect setae. Ventrites III-V with sparse light-colored setae. Ventrite V flattened, sparsely punctate, each puncture with light colored setae. Genitalia of *M. jabelagbasi* Agbas, Obrial, Barševskis, Cabras sp. nov. shown in Fig. 5, A-C.

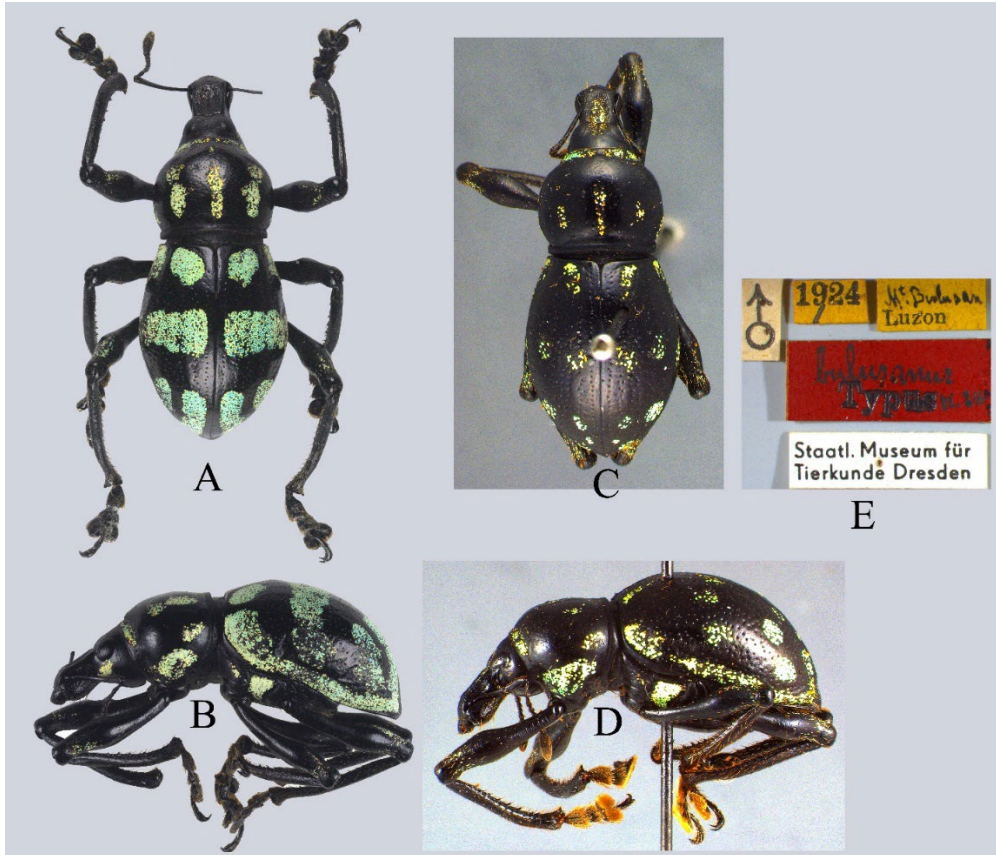


Figure 2. Habitus of *Metapocyrtus jabelagbasi* Agbas, Obrial, Barševskis, Cabras sp. nov.. A – ♂ Holotype, dorsal view. C– idem, lateral view. Habitus of *Metapocyrtus bulusanus* Heller, 1929 B – ♂ Holotype, dorsal view. D– idem, lateral view. E– idem, card labels.

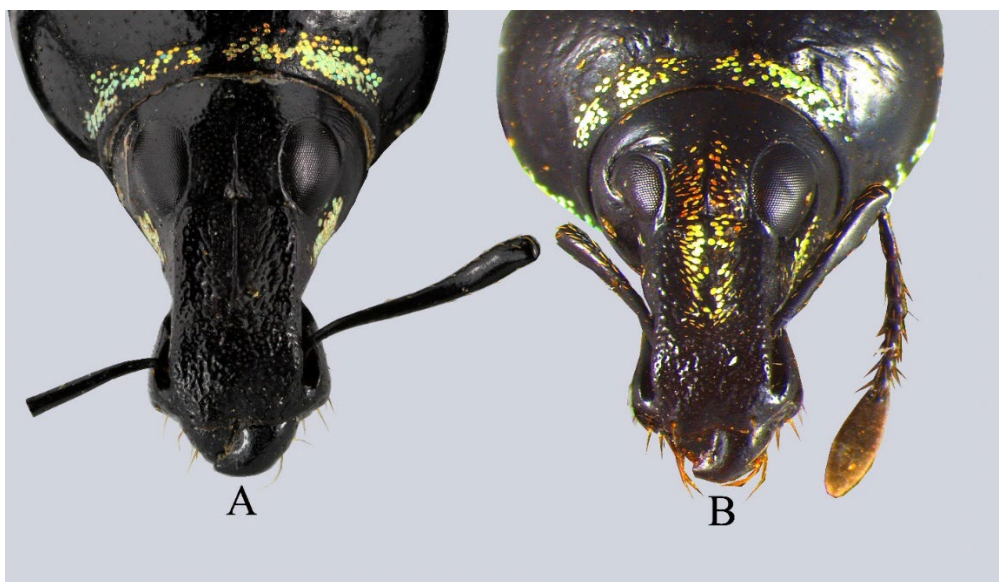


Figure 3. Rostrum of *Metapocyrtus jabelagbasi* Agbas, Obrial, Barševskis, Cabras sp. nov.. A – ♂ Holotype, dorsal view. Rostrum of *Metapocyrtus bulusanus* Heller, 1929 B – ♂ Holotype, dorsal view.

Female. Unknown

Etymology. The species is named after the father of the first author, Jabel Agbas.

Distribution. Philippines (Visayas: Samar, Lope De Vega.)

***Metapocyrtus ateriaagbasae* Agbas, Obrial, & Cabras sp. nov.**
(Fig. 3, A–D)

Holotype (Fig 4, A and B), male: Philippines – Mindanao Island, Davao Oriental, Municipality of Boston/ May 2023 / J. Villegas leg. (Typed on white card) // HOLOTYPE male / *Metapocyrtus ateriaagbasae* / Agbas, Obrial, & Cabras, sp. nov. (Typed on red card)” (Presently at DGC, to be deposited at PNM.

Paratypes (21 ♂♂, 26 ♀♀): Same data as holotype (typed on white card): All paratypes with additional red labels.

Paratype deposition: 2♂♂ and 3♀♀ to be deposited in PNM; 2♂♂ and 2♀♀ to be deposited in CNM; 2♂♂ and 2♀♀ deposited in MMCP; 2♂♂ and 2♀♀, deposited in UMCRC; 7♂♂ and 11♀♀, deposited in DGC; 2♂♂ and 2♀♀, to be deposited in SMTD; 2♂♂ and 2♀♀, to be deposited in DUBC; 2♂♂ and 2♀♀, to be deposited in CAS.

Diagnosis. *Metapocyrtus ateriaagbasae* Agbas, Obrial, & Cabras sp. nov. superficially resembles the female paratype of *Metapocyrtus nacolod* Cabras, Senarillos, & Ibañez, 2023, but is easily distinguishable in terms of the spotted scaly patches in the elytra of both males and females of the new species which is not observed in the male holotype of *M. nacolod*. The new species also differs from *M. nacolod* through the following characteristics: Prothorax, weakly

subglobular, as long as wide (vs. broadly truncate at base, wider than long in *M. nacolod*), with two subfalcate scaly markings on each side of disc (vs. two broad subtriangular scaly markings in *M. nacolod*). Aedeagus in dorsal view obtuse while *M. nacolod* is subemarginate; At lateral view, aedeagus is wider and blunt at apex, while *M. nacolod* having uniformly narrowed, pointed at apex.

Description. Male. Dimensions: LB: 10.3mm-11.0mm (Holotype: 11.0mm). LR: 1.8mm-2.0mm (Holotype: 2.0mm). WR: 1.4mm-1.5mm (Holotype: 1.5mm). LP: 3.0mm-4.0mm (Holotype: 4.0mm). WP: 3.5mm-4.4mm (Holotype: 4.4mm). LE: 7.1mm-7.8mm (Holotype: 7.8mm). WE: 4.5mm-5.5mm (Holotype: 5.5mm). N=22.

Integument black. Body surface moderately lustrous and moderately subglabrous.

Head. Dorsum between eyes, weakly depressed, with distinct median furrow, adorned with tessellated round iridescent orange scales, interspersed with recumbent green piliform scales; Eyes very weakly convex.

Rostrum separated from head by a distinct transverse groove reaching the lateral margin of eyes. Coarsely rugose at obliques of basal half, with sparse recumbent green piliform scales directed towards middle; Basal half with distinct median furrow forming a narrowly suboblongate depression at middle, adorned with sparse iridescent circular orange scales, interspersed with sparse recumbent green piliform scales. Longer than wide (LR/WR: 2.00mm/1.5mm); Dorsal contour in lateral view, flat. Antenna, scape and funicles subequal in length; Antennal scape sparsely covered with iridescent green piliform

scales. Funicular segment I as long as wide with Funicular segment II, three times longer than wide; Segments III-VI, nearly as long as wide, segment VII, slightly longer and slightly wider than segments III-VI; Club sub-ellipsoidal, three times longer than wide.

Prothorax weakly subglobular, almost as long as wide (LP/WP: 4.0mm/4.4mm), subglabrous, widest at middle, with the following iridescent scaly markings of tessellated green round scales: a) two subfalcate scaly markings on each side of disc, b) stripe along apical margin, and c) thick scaly patch before coxae, confluent with b the stripe along apical margin. Dorsal contour in lateral view, almost flat.

Elytra narrowly ovate (LE/WE: 7.8mm/5.5mm), wider and almost twice longer than prothorax (WE/WP: 5.5mm/4.4mm, LE/LP: 7.8mm/4.4mm), subglabrous, sparsely punctured, weakly convex lateral contour, with the following scaly markings of tessellated round iridescent green to orange scales on each elytron: a) before base of elytron, dorsally, one oval scaly patch, laterally,

One large broad ovate scaly patch above lateral margin, barely reaching dorsolateral surface, b) with two sub circular scaly patches, one medial near suture, one submedial on dorsolateral surface, and one short pyriform scaly patch just above lateral margin, c) three subcircular scaly patches at apicad on dorsolateral surface, one subdorsal near suture, one on dorsolateral surface, and one confluent with the thick but short horizontal stripe along lateral margin, d) one short longitudinal stripe near suture, subconfluent with the short horizontal stripe along lateral margin. Elytral apex laterally viewed, acute with sparse short setae.

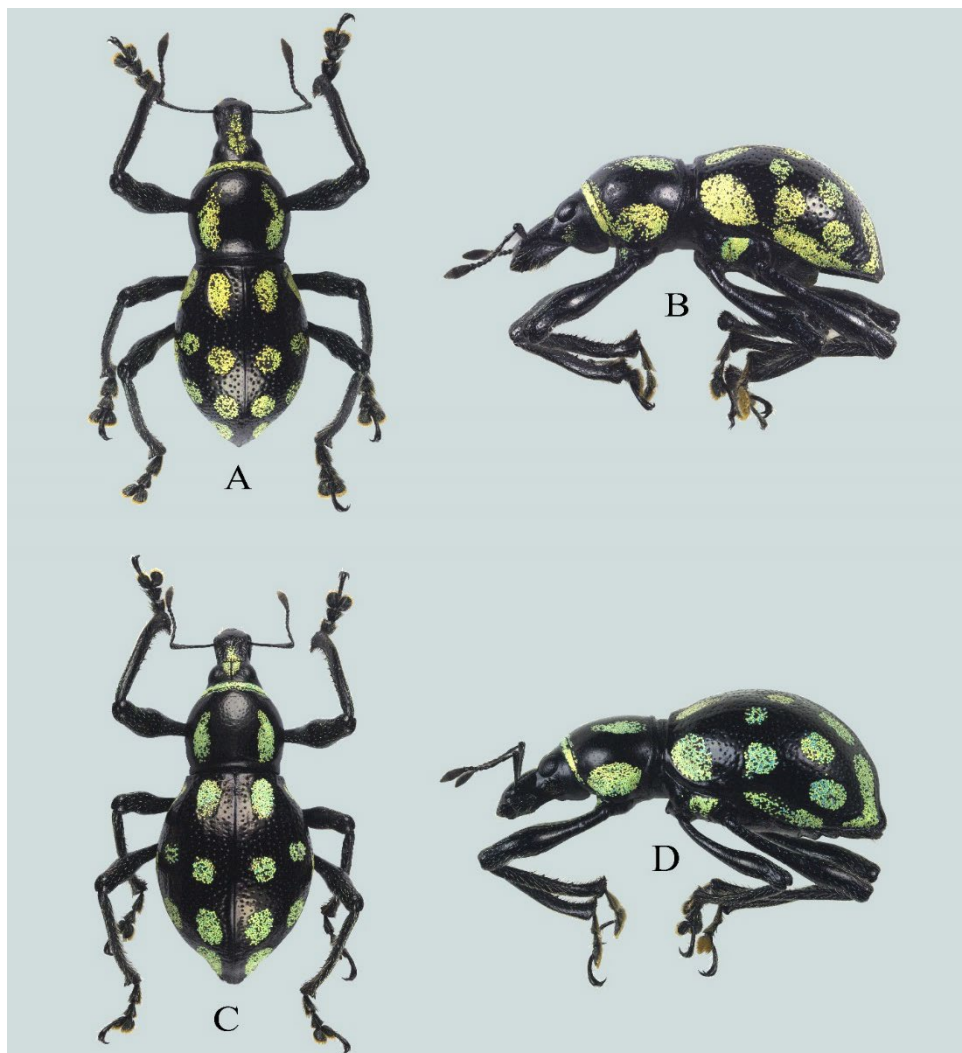


Figure 4. Habitus of *Metapocyrtus ateriaagbasae* Agbas, Obrial, & Cabras sp. nov. A— ♀ holotype, dorsal view. B— idem, lateral view

Legs with moderately clavate femora. Femora sparsely covered with recumbent turquois piliform scales getting longer apically. Tibiae, covered with suberect transparent setae; Pro and meso tibiae denticulate and mucronate at apex. Tarsomeres with sparse iridescent green recumbent piliform scales interspersed white setae directed towards apex. Coxae, covered with sparse suberect to adpressed greenish

piliform scales and white setae; Pro coxae, anteriorly with sparse elliptical iridescent green scales, interspersed with greenish piliform scales. Abdomen. Mesothorax, weakly rugose, with sparse minute greenish piliform scales; Metathorax, adorned with tessellated round iridescent turquois scales. Mesoventrite rugose, with small sparse adpressed bluish-green piliform scales; Metaventrite, rugose weakly depressed, with

sparse greenish-blue piliform scales, interspersed with transparent setae. Ventrite I, coarsely rugose, depressed, with light-colored suberect setae getting longer posteriorly. Ventrite II with long white suberect setae, dense at middle; Ventrites III-V with sparse recumbent light-colored

short setae posteriorly; Ventrite V flattened, rugopunctate at apical half, punctures with light colored setae. Genitalia of *Metapocyrtus ateriaagbasae* Agbas, Obrial, & Cabras, sp. nov. shown in Fig. 5, D-F.

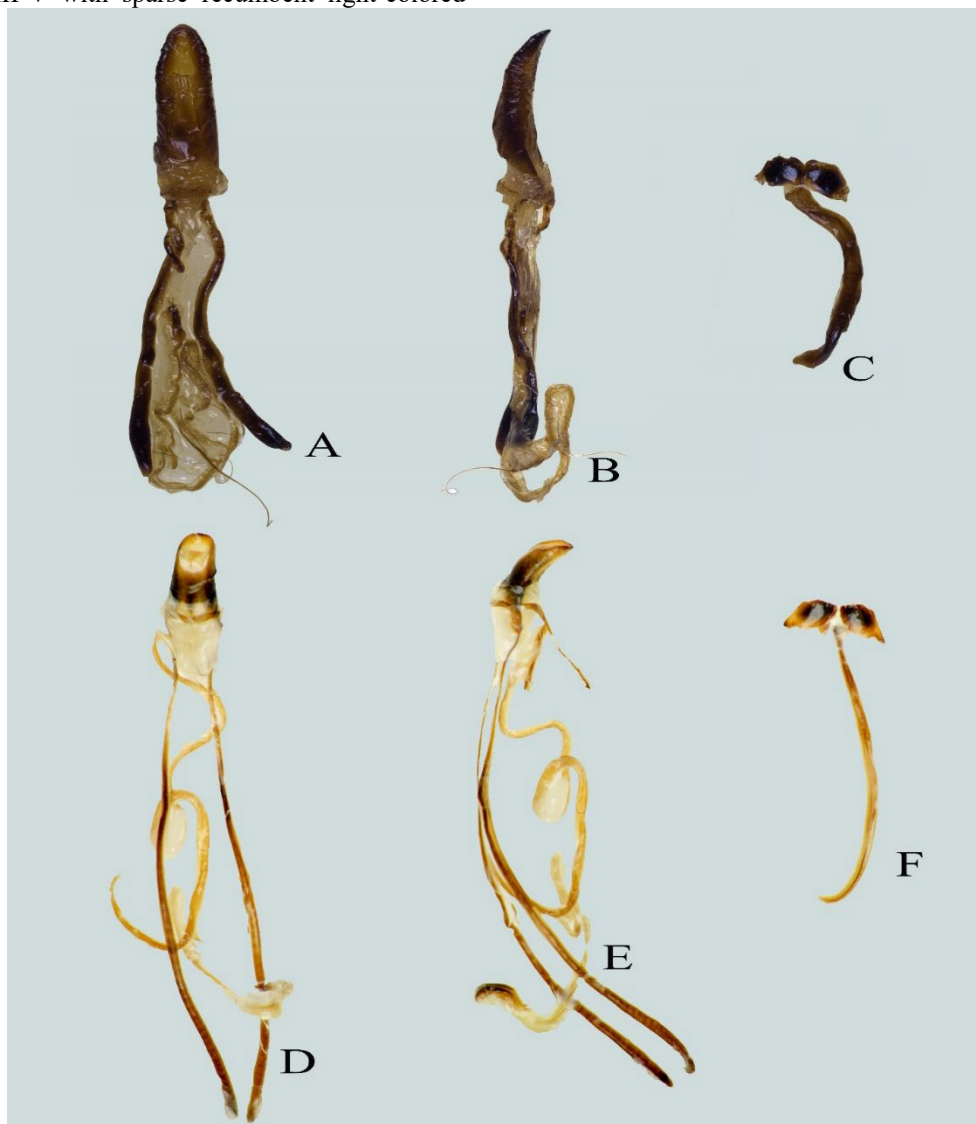


Figure 5. Holotype, male genitalia of *Metapocyrtus* ssp. *Metapocyrtus jabelagbasi* Agbas, Obrial, Barševskis, Cabras sp. nov. A– Aedagus, dorsal view. B– idem, lateral view, C– Sternite IX. Genitalia of *Metapocyrtus ateriaagbasae* Agbas, Obrial, & Cabras sp. nov. D– Aedagus, dorsal view. E– idem, lateral view, F– Sternite IX

Female. Dimensions: LB: 11mm-13.0mm. LR: 1.8mm-2.0mm. WR: 1.2mm-1.8mm. LP: 3mm-3.5mm. WP: 3.5mm-4.0mm. LE: 7.0mm-8.4 mm. WE: 5mm-6.5mm. N=26.

Females differ from males by the elytra longer, significantly wider, and more convex than males. Otherwise mentioned, female is similar to male.

Etymology. The new species is named after the mother of the first author, Asteria Agbas.

Distribution. Philippines (Mindanao: Davao Oriental, Municipality of Boston)

Notes on scale color and elytral pattern variation of *Metapocyrtus kuehli* Cabras, Villanueva, & Medina, 2020 and *Metapocyrtus dagtum* Cabras, Torrejos, & Medina, 2021

The genus *Metapocyrtus* Heller, 1912 is renowned for its strikingly ornamented elytra and diverse scale coloration, both of which contribute to its taxonomic complexity and ecological significance. Elytral patterns, often composed of intricate metallic or iridescent scales, exhibit significant variations across species and even within populations. These patterns are believed to serve multiple functions, including predator deterrence. In *Pachyrhynchus* Germar, 1824 a genus within the same tribe, a study by Tseng et al. (2014) found that vibrant patterns not only enhance visual appeal but also function as aposematic signals, warning predators of unpalatability through bright coloration (also noted in Obrial et al., 2024; Agbas et al., 2024; Medina et al., 2024). This suggests that similar ecological pressures may have influenced the evolution of coloration in the genus *Metapocyrtus*.

Since the establishment of the genus, scale coloration and elytral patterns have been considered as one of the factors in species

delineation, with some species even named after their distinctive scale colors. However, recent findings have revealed that these traits alone are insufficient for reliable species identification, as intraspecific variation and pattern convergence can obscure taxonomic boundaries. A fascinating example of this phenomenon is seen in *Metapocyrtus dagtum* Cabras, Torrejos, & Medina, 2021. In the original description paper of *M. dagtum*, Cabras et al. (2021) documented considerable variation in elytral patterns and scale markings within the type series, ranging from densely scaled to sparsely scaled or nearly bare elytra. In addition to the holotype, the authors reported three distinct forms: one with scattered scales across the elytra, another with scales arranged in vertical lines along the striations, and a third displaying three distinct transverse bands.

During a coleopterological expedition in Maragusan, Davao De Oro, significant intraspecific variation in scale coloration and elytral patterns was once again observed in *M. dagtum*, along with new insights into *Metapocyrtus kuehli* Cabras, Villanueva, & Medina, 2020 as shown in figure 6. Notably, individuals exhibiting distinct scale colors and pattern variations were found coexisting on the same tree and within the same area, reinforcing the notion that elytral ornamentation alone is insufficient for species differentiation within *Metapocyrtus*.

The observed variations in *M. dagtum* and *M. kuehli*, also suggests that scale color and elytral patterns may be influenced by environmental factors, genetic polymorphism, or developmental plasticity rather than being strictly species-specific characteristics. This observed extensive variability in some species or species groups in the genus complicates the establishment of clear diagnostic features based solely on one external morphology, reinforcing the necessity of integrating multiple lines of evidences. A more robust taxonomic

framework should incorporate detailed morphological assessments—including rostrum structure, genitalia, and other key

anatomical features—alongside molecular analyses if need be.

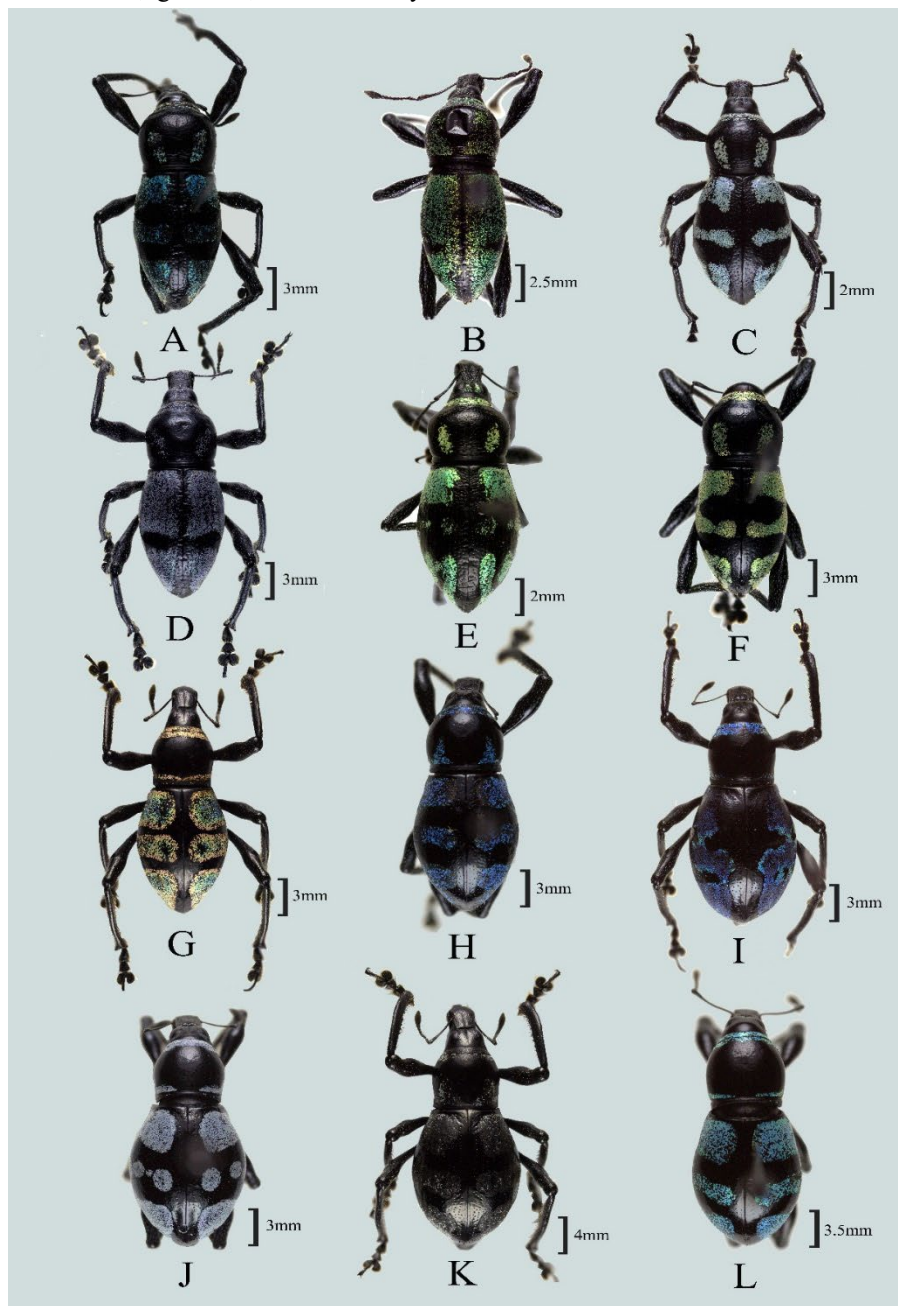


Figure 6. A-F *Metapocyrthus dagtum* color and pattern variation. G-L *Metapocyrthus kuehli* color and pattern variation.

Short note on Taxonomy

The genus *Metapocyrtus* is a non-monophyletic and a specious group from the tribe Pachyrhynchini that badly needs revision, having many ill-defined subgenera and species with erroneous subgeneric placements and synonymies (Cabras et al., 2024a). At the moment, the authors will be placing the aforementioned new species as *Metapocyrtus sensu lato* until a proper revision of the genus is made.

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