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Three new species of the genus *Metapocyrtus* Heller 1912, subgenus *Orthocyrtus* Heller 1912 (Coleoptera, Curculionidae, Entiminae, Pachyrhynchini), from Mindanao Island, Philippines

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Three new species of the genus *Metapocyrtus* Heller 1912, subgenus *Orthocyrtus* Heller 1912 (Coleoptera, Curculionidae, Entiminae, Pachyrhynchini), from Mindanao Island, Philippines

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Abstract

Three new species of genus *Metapocyrtus* Heller 1912, subgenus *Orthocyrtus* Heller 1912 (Coleoptera, Curculionidae, Entiminae, Pachyrhynchini) from Mindanao Island, Philippines are described: *M.* (*O.*) *regalis* sp.nov., *M.* (*O.*) *tboli* sp.nov. and *M.* (*O.*) *reagani* sp.nov. Photographs of their habitus and male genitalia are presented.

Keywords: archipelago, beetles, endemic, novel species, taxonomy, weevils

Introduction

The genus *Metapocyrtus* Heller 1912 is a hyper diverse member of the tribe Pachyrhynchini exclusively distributed in the Philippine islands. It is set apart from other members of the tribe Pachyrhynchini by these general diagnostic characters "rostrum apically not swollen, basally with a more or less strongly pronounced transverse groove, eyes moderately convex, not bulging, scape of antenna reaching at least to or beyond hind margin of eye" (Schultze,1925). Currently, it includes more than 230 described species and 7 subgenera, with many taxa remaining still undescribed (Yap and Gapud 2008; Yoshitake 2017; Bollino et al. 2020; Cabras and Medina, 2021). One of the subgenera of the genus *Metapocyrtus* Heller 1912 is the subgenus *Orthocyrtus* whose members are conspicuous for their large size. A count of the 38 species distributed all over the Philippines was recently given by Cabras et al. (2021).

In Mindanao, 5 new species of *Orthocyrtus* have recently been described- M. (O.) mansaka Cabras, Bollino & Medina, 2018, M. (O.) ginalopezae Cabras & Medina, 2019, M. (O.) davaoensis Cabras, Medina & Bollino, 2021, M. (O.) hirakui Cabras, Medina & Bollino, 2021, M. (O.) barsevskisi Cabras, Villanueva, & Medina, 2021 (Cabras et al. 2018, 2021; Cabras and Medina, 2019, Cabras et al. 2021a, Cabras et al. 2021b) of which three are known from Davao region, one from Bukidnon, and another one from Surigao. The discovery of new species from Mindanao comes as no surprise since it is one of the remaining frontiers of biodiversity in the Philippines and coleopterological works on this island has been limited. As a result of our sampling, and thanks to several donations from friends and colleagues, we have had the opportunity to identify some specimens as belonging to species new to science: of these three are described and illustrated in this article.

Materials and methods

The specimens deposited in the University of Mindanao Coleoptera Research Center were collected through sheet beating and hand picking and killed in vials with ethyl acetate. Morphological characters were observed under Luxeo 4D and Nikon SMZ745T stereomicroscopes. The illustrations, as well as the treatment of the genitals, were identical to those described by Yoshitake (2011). Due to the little or almost no use of the female genitalia in identifying and characterizing the different species of Pachyrhynchini (Bollino et al. 2020), the said anatomical parts are no longer illustrated. Images of the habitus and genitalia were taken using a Nikon D5300 digital camera with a Sigma 18–250 macro lens. All images were stacked and processed using a licensed version of Helicon Focus 6.7.0 and Photoshop CS6 Portable software. Label data are indicated verbatim. Measurements mentioned in this paper are abbreviated as follows:

- / = different lines
- // = different labels
- $\bar{a} = arithmetic mean$

LB = length of the body in dorsal view, from the apical margin of the pronotum to the apices of the elytra

LE = length of the elytra in dorsal view, from the level of the basal margins to the apices of the elytra

LP = length of the pronotum, from the base to apex along the midline

LR = length of the rostrum

- WE = maximum width across the elytra
- WP = maximum width across the pronotum
- WR = maximum width across the rostrum

All measurements are in millimeters.

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

MBLI: private collection of Maurizio Bollino, Lecce, Italy **SMTD:** Senckenberg Natural History Collections, Dresden, Germany **UMCRC:** University of Mindanao Coleoptera Research Center, Davao City Philippines

Taxonomy

Metapocyrtus (Orthocyrtus) regalis Cabras, Medina & Bollino sp. nov. Figs 1–4

Holotype (Figs 1, 3), male: Philippines – Mindanao / Gutalac / Zamboanga del Norte / Nov.2021/ coll. Local collector (typed on white card) // HOLOTYPE male / *Metapocyrtus* (*Orthocyrtus*) regalis / CABRAS, MEDINA & BOLLINO, 2021 (typed on red card). Presently

in UMCRC, will be deposited in National Museum of Natural History (PNMNH) under the National Museum of the Philippines.

Paratypes (21 33, 18 99): 333, 399: same data of the Holotype, all in UMCRC; 13: Philippines – Mindanao / Gutalac / (Zamboanga del Norte) / IX-XI.2016 / coll. Bollino; 233, 599: Philippines – Mindanao / Gutalac / (Zamboanga del Norte) / VII.2018 / coll. Bollino; 133: Philippines – Mindanao / near Siocon / (Zamboanga del Norte) / VII-IX.2019 / coll. Bollino; 1333, 999: Philippines – Mindanao Island / Sitio Quary, Barangay Donia Cecilia / Sirawai (Siocon, Zamboanga del Norte) / $\sim 7^{\circ}34$ 'N 122°10'E - m 100 – IX.2018 / Lgt. local people - coll. Bollino, all in MBLI; 1333, 1923: Philippines – Mindanao Island el Norte) / $\sim 7^{\circ}34$ 'N 122°10'E - m 100 – IX.2018 / Lgt. local people - coll. Bollino, all in MBLI; 1333, 19233: Philippines – Mindanao Island el Norte) / $\sim 7^{\circ}34$ 'N 122°10'E - m 100 – IX.2018 / Lgt. local people - coll. Bollino, will be deposited in SMTD.

Diagnosis. *Metapocyrtus (Orthocyrtus) regalis* sp. nov. is different from the rest of the other members of *Orthocyrtus* by the following features: robust, moderately stout and strongly convex body and yellowish-orange elytral markings consisting of thin band from stria II to lateral margin, widened laterally; two median subcircular patches from stria I-IV, and from stria VI-IX, and subtriangular patch on apical third from stria II to lateral margin.

Description. Male. Dimensions (in mm): LB 11.8–12.5 (holotype 11.8, â: 12.03), LR 2.2–2.1 m (2.2, â: 2.26), WR 1.9–2.0 (1.9 mm, â: 1.96), LP 4.5–5.0 (4.5, â: 4.67), WP: 4.5–5.0 (4.5, â: 4.67), LE 7.0–7.8 (7.5, â: 7.43), WE 5.5–6.0 (6.0 mm, â: 5.83). *N* = 4.

Integument black. Body surface, rostrum, head, and underside lustrous. *Body* subglabrous.

Head subglabrous, dorsal surface smooth but lateroventral surface with sparse minute and light-colored hairs; forehead between eyes slightly bulging with faint longitudinal groove almost reaching the vertex.

Rostrum rugose on basal half and finely punctured on apical half, longer than wide (LR/WR: 1.16), bearing minute, light colored, adpressed hairs on dorsum and long whitish hairs on lateral surface; transverse basal groove distinct; longitudinal groove along midline distinct with a shallow pit-like depression; lateral sides below the eyes with sparse light-yellow round to elliptical scales; dorsal surface weakly convex. Eyes medium-sized and feebly convex. Antennal scape slightly shorter than funicle, moderately covered with fine, light-colored hairs. Funicular segments I and II almost of the same length, twice as long as wide; segments III–VII nearly as long as wide; club subellipsoidal, nearly three times longer than wide.

Prothorax subglobular, as long as wide (LP/WP: 1.0), moderately punctate with minute hairs, widest at middle, sides evenly arcuate, strongly convex, and with the following scaly markings of yellowish orange round scales with pink to purple shimmer: a) thin band at the anterior margin, and b) broad lateroventral stripe before the coxa confluent with the anterior band.

Elytra subovate (LE/WE:1.25), wider and nearly twice longer than prothorax (WE/WP: 1.33, LE/LP: 1.67), body surface black, subglabrous, setiferous punctate, moderately stout, dorsum strongly and uniformly convex in profile with a gradual apical declivity; apex with sparse, light colored, fine hairs. Each elytron with the following scaly markings of yellowish orange round scales with pink to purple shimmer: a) thin band from stria II to lateral margin, slightly constricted on stria V then widened laterally, b) two subcircular median patch from stria I-IV, and from stria VI-IX, and d) subtriangular patch on apical third from stria II to lateral margin.



Figures 1–4. *Metapocyrtus (Orthocyrtus) regalis* sp. nov. 1 male holotype, dorsal view 2 female, dorsal view 3 ditto, male, lateral view, 4 ditto, female, lateral view.

Legs with strong clavate femora. Femora sparsely covered with minute light-colored hairs, and moderately covered with minute blue-green elliptical scales towards apical fourth. Tibiae covered with sub-adpressed, light-colored hairs and long light-colored bristles along inner margin; weakly serrate along inner margin. Fore tibiae bear a mucro at apex. Tarsomeres covered with pubescence. Coxae barely pubescent with pale bluish to yellowish round scales on distal end. Mesoventrite covered with light-colored, adpressed hairs. Metaventrite with light-colored, adpressed hairs and yellowish round scales at distal ends. Ventrite I weakly depressed on disc, with light-colored, adpressed hairs and yellowish to bluish round scales towards distal ends. Ventrites II–V sparsely covered with adpressed hairs, especially towards margin. Ventrite V flattened, apical half finely densely punctured, interspersed sparsely with light colored hairs.

Male genitalia as shown in Figs 13–15.

Female. Dimensions (in mm): LB 12.0–14.8 (â: 13.4), LR 2.0.–2.5 (â: 2.25), WR 1.7–1.9 (â: 1.8). LP 3.7–4.0 (â: 3.85). WP 4.0–4.5 (â: 4.25), LE 9.0–9.1 (â: 9.05). WE 6.0–7.0 (â: 6.5). *N* = 3.

Habitus as shown in Figs 2, 4.

Females differ from males in the following: a) pronotum (LP/WP 0.88-0.93), slightly shorter than in male; b) pronotum less arcuate than male, and c) elytra imperfectly subovate (LE/WE 1.27–1.3), longer and wider (WE/WP 1.64–1.67, LE/LP 2.97–3.0) than in male; d) Ventrite I flattened, less hairy and not depressed on disc. Otherwise female similar to the male.

Etymology. The specific epithet comes from the Latin *regalis* (royal, regal) which refers to the regal appearance of this species deriving from its bright yellowish- orange coloration.

Distribution. *Metapocyrtus (Orthocyrtus) regalis* sp. nov. is known from Zamboanga del Norte.

Metapocyrtus (Orthocyrtus) tboli Cabras, Medina & Bollino sp. nov. Figs 5–8

Holotype (Figs 5, 7), male: Philippines – Mindanao / Kapatagan / Davao del Sur / Nov.2020 / coll. Local collector (typed on white card) // HOLOTYPE male / *Metapocyrtus* (*Orthocyrtus*) *tboli*/ CABRAS, MEDINA & BOLLINO, 2021 (typed on red card). Presently in UMCRC, will be deposited in National Museum of Natural History (PNMNH) under the National Museum of the Philippines.

Paratypes (55 $3, 32 \oplus 9$): $13, 2 \oplus 9$: same data of the Holotype, all in UMCRC; $4833, 29 \oplus 9$: Philippines – Mindanao / Davao – Mt. Apo / VIII.2009 – m 1000-1200 / lg. local people – coll. M. Bollino; 13: Philippines – Mindanao / Sarangani / Kiamba / IX.2015 / coll. Bollino; 233: Philippines – Mindanao / Kiamba / (Sarangani) / January-March 2071 / coll. Bollino; 13: Philippines – Mindanao / Mt. Kapatagan / Davao del Sur Prov. / IX-X.2012 / coll. Bollino; 13: Philippines – Mindanao / Mt. Apo – Calatagan / (Davao del Sur-Brgy. Digos) / VI-VII.2017 – m 1400-1500 / coll. Bollino, all in MBLI; 13, 19: Philippines – Mindanao / Davao – Mt. Apo / VIII.2009 – m 1000-1200 / lg. local people – coll. M. Bollino, will be deposited in SMTD.



Figures 5–8. *Metapocyrtus (Orthocyrtus) tboli* sp. nov. 5 male holotype, dorsal view 6 female, dorsal view 7 ditto, male, lateral view 8 ditto, female, lateral view.

Diagnosis. *Metapocyrtus (Orthocyrtus) tboli* sp. nov. is different from the rest of the other members of *Orthocyrtus* for its elytral scaly marking consisting of thin sub-basal and median transverse stripe from stria I towards lateral margin, longitudinal stripe on apical third along stria II, long postmedian stripe along lateral margin towards apex, confluent with the stripe along stria II, and two small dots on interval V and VI at apical quarter, at times confluent with the distorted longitudinal stripe on stria II, forming a subtriangular shape.

Description. Male. Dimensions (in mm): LB 11.0–11.1 (holotype 11.0, â: 11.05), LR 2.2–2.5 m (2.2, â: 2.35), WR 1.8–2.0 (1.8 mm, â: 1.9), LP 3.7–3.9 (3.7, â: 3.8), WP: 4.0–4.1 (4.0, â: 4.05), LE 7.0–7.1 (7.0, â: 7.05), WE 5.5–5.8 (5.5 mm, â: 5.65). *N* = 2.

Integument black. Body surface, rostrum, head, and underside with weak luster. *Body* subglabrous.

Head subglabrous with sparse and minute pubescence on lateroventral side; underside of eyes with metallic, light blue, elliptical scales on each side interspersed with sub-adpressed setae; frons in between eyes nearly flattish with sparse light blue round scales.

Rostrum finely punctured, longer than wide (LR/WR: 1.22), bearing sparse, minute, light colored, adpressed hairs on dorsum; lateral surface covered with long whitish hairs; anterolateral sides with long yellowish hairs; transverse basal groove distinct; longitudinal groove along midline visible with shallow depression beset with light blue minute round scales; lateral sides with white and light blue minute round scales; dorsum finely punctate; dorsal surface weakly convex. Eyes medium-sized and moderately convex. Antennal scape as long as the funicle, moderately covered with fine, light-colored hairs especially toward the distal ends. Funicular segments I and II almost of the same length, twice as long as wide; segments III–VII nearly as long as wide; club subellipsoidal, nearly three times longer than wide.

Prothorax subglobular, slightly wider than long (LP/WP: 0.925), with setiferous fine punctures, widest before middle with highest point just after apical margin, weakly convex, and with the following scaly markings of minute light blue round scales: a) fine transverse stripe along the anterior margin, b) thin lateroventral band before the coxa confluent with the anterior band, c) two small subcircular spots on middle of discs, and d) thin stripe along the lateral side of posterior margin.

Elytra subovate (LE/WE:1.27), significantly longer and moderately wider than prothorax (WE/WP: 1.38, LE/LP: 1.89), body surface black subglabrous, setiferous punctate, strongly convex dorsally; apex with sparse, light colored, fine hairs. Each elytron with the following scaly markings of minute light-blue round scales: a) thin, sub-basal, transverse stripe from stria I towards lateral margin, b) thin, median, transverse stripe starting from interval I towards but not reaching lateral margin, c) longitudinal stripe on apical third along stria II, d) long postmedian stripe along lateral margin extending towards apex, confluent with the longitudinal stripe on stria II, and d) two small dots on interval V and VI at apical quarter, at times confluent with the distorted longitudinal stripe on stria II, forming a subtriangular shape.

Legs with strong clavate femora. Femora sparsely covered with minute light-colored setae, denser towards the apex. Tibiae covered with subadpressed, brownish hairs and long light-colored bristles along inner margins, weakly serrate along inner margin. Fore tibiae bear a mucro at apex. Tarsomeres covered with pubescence. Coxae barely pubescent with light elliptical scales and light-colored hairs on distal end. Mesoventrite covered with light-colored, adpressed hairs. Metaventrite depressed with light-colored, adpressed hairs and light blue round scales at lateral sides. Ventrite I moderately depressed on disc, with light-colored, adpressed hairs and light blue round scales towards distal ends. Ventrites II–V sparsely covered with adpressed hairs,

especially towards margin. Ventrite V flattened, apical half finely densely punctured, interspersed sparsely with light colored hairs.

Male genitalia as shown in Figs 16–18.

Female. Dimensions (in mm): LB 10.5–11.5 (â: 11), LR 2.0.–2.1 (â: 2.05), WR 1.6–1.8 (â: 1.7). LP 3.0–3.5 (â: 3.25). WP 3.8–4.0 (â: 3.9), LE 7.5–8.1 (â: 7.8). WE 5.8–6.5 (â: 6.15). *N* = 2. Habitus as shown in Figs 6, 8.

Females differ from males in the following: a) pronotum (LP/WP 0.79-0.88), slightly shorter than in male; b) pronotum less arcuate than male, and c) elytra imperfectly subovate (LE/WE 1.25–1.29), longer and wider (WE/WP 1.52–1.63, LE/LP 2.31–2.5) than in male, widest before middle; d) ventrite 1 flattened, less hairy and not depressed on disc. Otherwise female similar to the male.

Etymology. The new species is named after the indigenous community inhabiting Kiamba Saranggani, the Tboli people.

Distribution. *Metapocyrtus (Orthocyrtus) tboli* sp. nov. is known from Saranggani and Davao Provinces.

Metapocyrtus (Orthocyrtus) reagani Cabras, Medina & Bollino sp. nov. Figs 9.–12

Holotype (Figs 9, 11), male: Philippines – Mindanao / Talakag / Bukidnon / July.2018 / coll. Reagan Joseph Villanueva (typed on white card) // HOLOTYPE male / *Metapocyrtus* (*Orthocyrtus*) *reagani* / CABRAS, MEDINA & BOLLINO, 2021 (typed on red card). Presently in UMCRC, will be deposited in National Museum of Natural History (PNMNH) under the National Museum of the Philippines.

Paratypes $(8 \land 3, 8 \heartsuit \heartsuit)$: $6 \land 3, 5 \heartsuit \heartsuit$: same data of the Holotype, all in UMCRC; $2 \land 3, 2 \heartsuit \heartsuit$: Philippinen: / N-Mindanao Insel / Mt. Kitanglad / IV.1987; 1 \overline{a}: Philippines – Mindanao / Intavas / (Bukidnon) / January-March 2016 / coll. Bollino, all in MBLI.

Diagnosis. *Metapocyrtus (Orthocyrtus) reagani* sp. nov. is different from the rest of the other members of the subgenus for its unique elytral marking consisting of thick basal bands, moderately thin median transverse band, and distorted subtriangular stripe on apical third, and its stout aedeagus. Contrary to M. (O.) tboli which has two small spots on each side of disc, M. (O.) reagani has a transverse median stripe in pronotum

Description. Male. Dimensions (in mm): LB 12.5–13.0 (holotype 12.5, â: 12.71), LR 2.0–2.2 m (2.0, â: 2.1), WR 1.6–1.9 (1.6 mm, â: 1.78), LP 4.0–4.1 (4.0, â: 4.03), WP: 4.7–5.0 (4.7, â: 4.86), LE 8.0–8.5 (8.0, â: 8.3), WE 6.0–6.5 (6.0 mm, â: 6.24). *N* = 7.

Integument black. Body surface, rostrum, head, and underside with a weak luster. *Body* subglabrous.

Head subglabrous, sparsely minutely pubescent, with metallic, light yellow and pale blue elliptical to round scales on each side below the eye, and light-colored hairs on lateroventral parts; forehead between eyes with sparse metallic, light-yellow and pale blue round scales.

Rostrum weakly rugose and coarsely punctured, longer than wide (LR/WR: 1.25), bearing minute, light colored, adpressed hairs on dorsum and lateral surface below the antennal scrobes moderately covered with short brownish hairs, which become longer towards the apex;



Figures 9–12. *Metapocyrtus (Orthocyrtus) reagani* sp. nov. 9 male holotype, dorsal view 10 female, dorsal view 11 ditto, male, lateral view 12 ditto, female, lateral view.



Figures 13–21. Male genitalia of Orthocyrtus sp. 13–21: 13–15 Metapocyrtus (Orthocyrtus) regalis sp. nov. 16–18 Metapocyrtus (Orthocyrtus) tboli sp. nov. 19–21 Metapocyrtus (Orthocyrtus) reagani sp. nov.; 13, 16, 19 aedeagus in lateral view 14, 17, 20 idem. in dorsal view 15, 18, 21 sternite IX in dorsal view.

transverse basal groove distinct; longitudinal groove along midline faint, slightly depressed on middle and beset with metallic light yellow and pale blue round scales; lateral sides with light yellow and pale blue round to elliptical scales and white hairlike scales; dorsum finely punctured; dorsal surface moderately convex. Eyes medium-sized and moderately convex. Antennal scape slightly shorter than funicle, moderately covered with fine, light-colored hairs. Funicular segments I and II almost of the same length, twice as long as wide; segments III–VII nearly as long as wide; club subellipsoidal, nearly three times longer than wide.

Prothorax subglobular, slightly wider than long (LP/WP: 0.85), finely punctate, widest at middle, weakly convex, and with the following scaly markings of metallic light-yellow and pale blue round scales: a) fine transverse band at the anterior margin, b) transverse band in the entire width in the middle, and c) broad lateroventral stripe before the coxa confluent with the anterior and medial bands.

Elytra subovate (LE/WE:1.23), slightly wider and twice longer than prothorax (WE/WP: 1.28, LE/LP: 2.0), body surface black, sub-glabrous, finely setiferous punctate, moderately convex; apex with sparse, light colored, fine hairs. Each elytron with the following scaly markings of metallic, light-yellow to pale blue, round scales: a) thick transverse band from stria I to lateral margin slightly constricted on stria V; b) thin, median, transverse band starting from stria I to stria VIII; c) distorted subtriangular stripe on apical third; d) long stripe along lateral margin from behind the middle to apex, confluent with apical stripes.

Legs with strong clavate femora. Femora sparsely covered with minute light-colored hairs, with apex sparsely covered with pale blue hair like scales. Tibiae covered with subadpressed, light-colored hairs and long light-colored bristles along inner margin, weakly serrate along inner margin. Fore tibiae bear a mucro at apex. Tarsomeres covered with pubescence. Coxae barely pubescent with yellow ochre round scales on distal end. Mesoventrite covered with light-colored, adpressed hairs. Metaventrite with light-colored, adpressed hairs and light-yellow ochre, round scales at lateral sides. Ventrite I weakly depressed on disc, with light-colored, adpressed hairs and light-yellow ochre round scales towards lateral margin. Ventrites II–V sparsely covered with adpressed hairs, especially towards margin. Ventrite V flattened, apical half finely densely punctured, interspersed sparsely with colored hair-like scales. Ventrites I–V with dense and long, light-brown hairs, laterally with sparse light-colored hairs.

Male genitalia as shown in Figs 19-21.

Female. Dimensions (in mm): LB 14.5–14.8 (â: 14.62), LR 2.5.–2.6 (â: 2.54), WR 2.0–2.2 (â: 2.08). LP 4.0–4.2 (â: 4.08). WP 5.0–5.2 (â: 5.08), LE 10.0–10.3 (â: 10.12). WE 8.0–8.3 (â: 8.12). *N* = 5.

Habitus as shown in Figs 10, 12.

Females differ from males in the following: a) pronotum slightly wider but nearly as long as male (LP/WP 0.8-0.81); b) pronotum imperfectly subglobular and slightly sulcate, and c) elytra imperfectly subovate (LE/WE 1.14- 1.25), longer and wider (WE/WP 1.59–1.6, LE/LP 2.45–2.5) than in male, widest before middle; d) ventrite 1 flattened or slightly convex on disc. Metasternum and Ventrite 1 flattish. Otherwise, female similar to the male.

Etymology. The specific epithet is named after Reagan Joseph Villanueva (Davao, Philippines) for his great contribution in the advancement of insect studies in the Philippines, particularly the order Odonata.

Distribution. *Metapocyrtus (Orthocyrtus) reagani* sp. nov. is known from a restricted area of Bukidnon Province.

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