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Metapocyrtus (Artapocyrtus) willietorresi sp. n. (Coleoptera: Curculionidae) from Southern Mindanao (Philippines), with notes on its ecology and mimicry complex

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Metapocyrtus (*Artapocyrtus) willietorresi* sp.n. is described and illustrated. Ecological and biological data are given, including mimicry with species of *Pachyrhynchus* Germar, 1824 and *Doliops* Waterhouse, 1841 (Cerambycidae). Notes on the threats of this new species are furnished and a proposal to raise its conservation status as Threatened are presented.

Key words: Metapocyrtus, Artapocyrtus, Pachyrhynchus, Pachyrhynchini, nev species, Mindanao

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INTRODUCTION

Mt. Apo Natural Park is a declared national park and ASEAN biodiversity heritage site in Southern Mindanao. It has a total land area of 64000 hectares and it s famous for having the highest peak in the Philippines which reaches an altitude of 2954 masl. During the recent field work conducted by the Coleoptera research team of the University of Mindanao, a new species of the genus *Metapocyrtus* Heller, 1912of the subgenus *Artapocyrtus* Heller, 1912was discovered in Mt. Apo Natural Park (Davao del Sur). The new species belongs to the subgenus *Artapocyrtus* for having "rostrum relatively short, as long as broad, squarish or trapezoidal, the sides set off at right angles from the dorsal surface, arched lengthwise and separated from thecurved front by a prominent transverse groove." (Schultze 1925: 137). Currently the subgenus *Artapocyrtus* comprises of 20 species including 3 new species described from Mindanao and Luzon (Yap 2008; Yoshitake 2011; Bollino & Sandel 2017).

Mimicry among the tribe Pachyrynchini Schoenherr, 1826 was first recorded by Wallace (1889). During the period 1913-1934, the German coleopterist Willy Carl Marx Schultze (1923, 1925) did extensive studies on the tribe Pachyrhynchini

and recorded 19 species of *Pachyrhynchus* Germar, 1824 with either *Doliops* Waterhouse, 1841 or *Metapocyrtus* Heller, 1912 mimics. After Schultze last publication on this tribe (Schultze 1934), Pachyrynchini studies in the Philippines became dormant for nearly eighty years. As many newtaxa from different unexplored mountain ecosystems were discovered, many species involved in the mimicry complex were also found and some were new to science (Barševskis 2014, 2017; Cabras & Medina, in prep.). In this paper, a new species of *Metapocyrtus* forming part of the mimicry complex together with *Pachyrhynchus reicherti* Schultze, 1929 and *Doliops daugavpilsi* Barševskis, 2014 is described and notes on its ecology and mimicry are provided. Notes on the existing threats on the new species are also presented, and a Threatened conservation status is proposed.

MATERIAL AND METHODS

The specimenswere collected through beating sheet and handpicking and killed in vials with ethyl acetate. Morphological characters were observed under Luxeo 4D and Nikon SMZ745T stereomicroscopes. Stacked digital habitus images were taken with Nikon D5300 digital camera and Sigma 18-250 macro lens. All images were then stacked and processed using a licensed version of the software Photoshop CS6 Portable. Measurements mentioned in this paper are abbreviated as follows: LB - body length, from the apical margin of pronotum to the apex of elytra; LE - elytral length, from the level of the basal margins to the apex of elytra; WE - maximum width across the elytra; LP - pronotal length, from the base to apex along the midline; WP - maximum width across the pronotum; LR - length of rostrum; WR - maximum width across the rostrum. All measurements are given in millimeters and follow the measurement methodology of Yoshitake (2013).

The type material is deposited in:
UMCRC - University of Mindanao Coleoptera Research Center, Mindanao, Philippines

RESULTS

***Metapocyrtus* (*Artapocyrtus*) *willietorresi* sp. n.** (Fig. 1A-B)

Type material. Holotype, female (Fig. 1A-B): Philippines - Mindanao / Mt. Apo Natural Park/ Davao del Sur / V-VII.2017 / coll. Cabras. HOLOTYPE/ *Metapocyrtus (Artapocyrtus) willietorresi* sp.n. / A. A. Cabras & M. N. D. Medina des. 2018" (red label). Presently deposited in UMCRC, it will be deposited in Philippine Natural History Museum, Manila, Philippines.

Paratype (1 female): same data as the holotype. Presently deposited at UMCRC.

Description. Measurements (n=2): LB: 12.5-12.6 (holotype 12.5 mm). LR: 2.5-2.7 (2.5 mm). WR: 2.0-2.1 (2.0 mm). LP: 3.5-3.6 (3.5 mm). WP: 4.1-4.2 (4.1 mm). LE: 8.9-9.0 (8.9). WE: 6.0-6.1 (6.0).

Body black; head, pronotum and legs black, weakly lustrous with sparse pale yellow, green and blue-violet scales; elytra weakly lustrous with pale yellow, turquoise and blue-violet scales. Eyes, antennae and tarsomeres black.

Head with the following markings: a) dense elongated pale yellow and torquoiselateroventral stripes under eye, b) elongated stripe of pale yellow and torquoise scales from vertex to basal half of rostrum. Rostrum rugose, longer than wide,flattened dorso-apically, with minute white setae and long yellow hairs towards apex, with prominent transverse basal and longitudinal median grooves forming a cross shape. Eyes small and weakly convex. Antennal scape almost as long as funicle plus club, with white hairs. Funicular segments I and II almost of same length and three times longer than wide; segment III twice shorter than segments I and II; segments IV - VII as long as wide; club subellipsoidal, nearly three times longer than wide, covered with fine brown setae.

Pronotum subglobular, widest at middle, very weakly convex, almost flattened dorsally, with

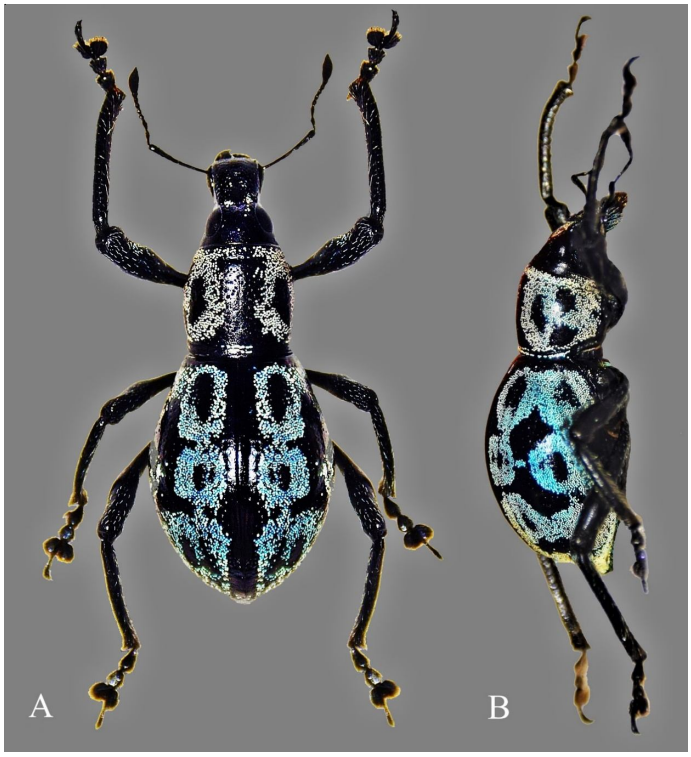

Fig. 1. Habitus of *Metapocyrtus (Artapocyrtus) willietorresi* sp.n., holotype. A: dorsal view, B: lateral view

Fig. 2. Female terminalia of *Artapocyrtus willietorresi* sp. nov. A: sternite VIII in ventral view; B: ovipositor indorsal view; C: spermatheca

very minute and sparse punctures and fine setae. Pronotum with the following scales: 1) thin stripes of pale yellow, turquoise and blue-violet scales at anterior and posterior margin, 2) dense pale yellow and turquoise stripe at latero-ventral margin confluent with anterior and posterior stripe, 3) two subparallel semicircular stripes at dorsolateral sides, 4) two small circles at lateral sides confluent with semicircular stripe and dense stripe at latero-ventral margin.

Elytramoderately convexwith sparse fine hairs; regular weakly striate-punctate intervals, with pale yellow, turquoise and blue-violet scales. Each elytron with the following markings: 1) two circular stripe just below base, 2) two circular stripes in middle of elytra, 3) triangular band at apical third but not filled and leaving some small circular empty spaces. Apex with white hairs. Scales on lateral margins with prominence of yellow scales. Underside weakly lustrous, pubescent with pale yellow and green scales on basal margin of pronotum and latero-ventral side of ventrites 1- 3.

Legs wide, with strongly clavate femora. Femora covered with short hairs and sparse blue-violet scales. Each tibia fringed with pubescence along internal margin, sparsely mixed with short hairs. Apical part of femora with dense, short setae. Tibiae with short setae andweakly toothed projections along internal edge. 33Tarsomeres covered by sparse pubescence.

Comparative notes. *Metapocyrtus* (*Artapocyrtus*) *willietorresi* n. sp. belongs to the subgenus *Artapocyrtus* and differs from all other species of the subgenus for its unique elytral ornamentation having 6 circular spots in the elytra and 3 circular spots in the lateral side of pronotum confluent with each other.

Female terminalia of *Artapocyrtus willietorresi* sp. nov. (sternite VIII in ventral view, ovipositor indorsal view and spermatheca) illustrated in Fig. 2.

Male: Unknown

Etymology. This new species is named after Dr. Guillermo P. Torres, Jr., president of the University of Mindanao for his amazing contribution and support to the advancement of coleopterological studies in Mindanao.

Notes on Ecology

Metapocyrtus willietorresi sp. n. (Fig. 3) was collected underside the leaves of *Rubus fraxinifolius* (Fig 4), a wild berry found in the slopes of Mt. Apo around an elevation of 1000 m a.s.l. *Rubus fraxinifolius* was quite abundant along the trail however we have collected only a few specimens of *Metapocyrtus willietorresi* sp. n., so further investigation will be needed to establish if the species is really rare in Mt. Apo. Mt. Apo is considered as one of the centers of diversity for the tribe Pachyrynchini with many species recorded and described from this mountain (Schultze 1923; Yoshitake 2012; Cabras et al. 2016). The species was collected in a junction between the remaining secondary forest and the encroaching farmlands. Land clearing is highly visible with the remaining forest at its backdrop (Fig. 5). The current habitat loss poses a great threat to the survival of this species in the wild, which requires immediate conservation actions.

Threats on *Metapocyrtus willietorresi* sp. n.

In the latest National List of Threatened Philippine Fauna andtheir categoriesprovided by DENR ADMINISTRATIVE ORDER 8 No. 2017, all species of *Metapocyrtus* were considered Vulnerable. Although, they were not included in the IUCN Red list because of the lack of IUCN specialists in the Philippines, most *Metapocyrtus* species are indeed facing great threats in the wild. Aside from being a Philippine endemic genus, many species of *Metapocyrtus* have a narrow geographic range and are endemic to a specific island or locality. In the case of *Metapocyrtus willietorresi* sp.n., it is only recorded so far in Mt. Apo Natural Park, Davao del Sur. It was collected at a much lower elevation of 1000 masl which experiences various threats which includes encroaching human habitation and conversion of the forest into agricultural land. Much of its habitat have already been converted into farmlands planted with *Daucus carota, Brassica oleracea var. capitate, Allium cepa,* etc. Many households are also found in the area. The specimens were collected at a junction between the forest and the farmlands and the local already employed slash and burn method in the remaining forests to convert it into additional farming land (Fig. 6). This great habitat threat, the narrow geographic range plus the low abundance of *M. willietorresi* sp.n. deserves that this species be considered as a Threatened. The authors propose that this species have a Threatened category for its conservation status. Immediate conservation actions should be done to protect the remaining population of this species in Mt. Apo.

Notes on Mimicry

Metapocyrtus willietorresi sp.n. from Mt. Apo Natural Park have the similar patterns with weevil *Pachyrhyncus reicherti*(Schultze, 1929) (Fig. 7) and long-horn beetle *Doliops daugavpilsi* Barševskis, 2014 which were collected and recorded in the same locality. The new species can be easily mistaken with its mimicsunless the rostrum and antennae are examined due to its striking resemblance in patterns. *Metapocyrtus willietorresi* sp.n. is a new *Metapocyrtus* mimic record for *Pachyrhyncus reicherti* (Schultze, 1929) (Fig. 6) collected in Kapatagan, Mt. Apo and *Doliops daugavpilsi* Barševskis, 2014 pre-

Fig. 3. *Metapocyrtus willietorresi* sp. n. in its natural habitat

Fig. 4. Host plant: *Rubus fraxinifolius* (Wild strawberry, Sapinit

viously recorded in Mt. Apo, Davao del Sur (Barševskis, 2014). As new localities are explored, the number of mimicry record will also increase drastically with the description of many species new to science. Mimicry among *Pachyrhynchus* and *Metapocyrtus* can be considered as Mullerian since both genera have fused elytra which makes them very hard and inedible to predators.

Fig. 5. Type locality of *Metapocyrtus (Artapocyrtus) willietorresi* sp.n.

Fig. 6. Threats to *Metapocyrtus willietorresi* sp.n. A) Human encroachment, B) Conversion of forest land to agricultural land

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Fig. 7. *Pachyrhynchus reicherti* (left) and *Metapocyrtus willietorresi* sp.n. (right)

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