Baltic J. Coleopterol. 18(1) 2018
ISSN 1407 - 8619

Three new species of genus *Pachyrhynchus* Germar, 1824 (Coleoptera: Curculionidae) from Panay Island, Philippines

Anita Rukmane, Analyn Cabras

Rukmane A. & Cabras A. 2018. Three new species of genus *Pachyrhynchus* Germar, 1824 (Coleoptera: Curculionidae) from Panay Island, Philippines. *Baltic J. Coleopterol., 18(1): 65 – 76.*

Three new species of the genus *Pachyrhynchus* Germar, 1824 (Coleoptera: Curculionidae) from the Panay Island (Philippines) are described and illustrated: *P. felipeae* sp. n., *P. franciscoi* sp. n. and *P. layroni* sp. n.. The distribution of all species is mapped. Thecase of mimicry between *P. layroni* sp.n. and *Metapocyrtus sp.* from Panay Island are provided and illustrated.

Key words: Coleoptera, Curculionidae, *Pachyrhynchus*, fauna, taxanomy, new species, Panay Island, Philippines, mimicry, *Metapocyrtus*

Anita Rukmane. Daugavpils University, Institute of Life Sciences and Technology, Coleopterological Research Center, Vienības Str. 13, Daugavpils, LV – 5401, Latvia; e-mail: anitakraslava@inbox.lv

Analyn Cabras. College of Arts and Sciences Education. University of Mindanao, Matina, Davao City, 8000, Philippines; e-mail: ann.cabras24@umindanao.edu.ph

INTRODUCTION

In recent years, many new species of genus *Pachyrhynchus* Germar has been described (Bollino & Sandel 2015; Rukmane & Barševskis 2016; Cabras & Rukmane 2016; Bollino et al 2017) with majority of described taxa from Mindanao PAIC, comprising number of species within the genus to as much as 143 species. Yet, many small islands of Philippines remain entomologically unexplored, such as Panay Island. After careful examination of a new material from this island, three new *Pachyrhynchus* were found, which are described in the present study.

Among the interesting features of the genus *Pachyrhynchus* is its mimicry with several weevil genera such as *Metapocyrtus*, *Macrocyrtus*, *Eupyrgops*, and *Polycatus* as well as *Doliops* (Cerambycidae) which has been continuously mentioned by several Philippine beetle fauna researchers (Anichtchenko 2016, 2017; Barševskis 2013, 2014, 2016, 2017a, 2017b; Barševskis & Jager 2014). Part of the authors' current

project includes documenting mimicry complex of *Pachyrhynchus* which seems to be well represented in almost every island and mountain ecosystems. Upon examination of a new material from Panay Island, interesting examples of mimicry between *Pachyrhynchus* and *Metapocyrtus sp.* were found which are presented in this article.

MATERIAL AND METHODS

The studied material is deposited in DUBC, Daugavpils University beetle collection; Institute of Life Sciences and Technology, Coleopterological Research Centre, Ilgas, Daugavpils District, Latvia (A. Barševskis)

The laboratory research and measurements have been carried out using Nikon AZ100, Nikon SMZ745T and Zeiss Stereo Lumar V12 digital stereomicroscopes, NIS-Elements 6D software. The habitus photograph was obtained with a digital camera Canon EOS 6D with Canon MP- E 65 mm macro lens, using Helicon Focus auto montage and subsequently was edited with Photoshop.

The maps of the Philippine archipelago have been drawn using the software ArcGis 10.

The following measurements are used in this paper and abbreviated as follows: LB – length of body; LE - length of elytra; WE – maximal width of elytra; LP - length of pronotum; WP - maximal width of pronotum; LR - length of rostrum; WR - maximal width of rostrum. All measurements are given in millimeters.

RESULTS

***Pachyrhynchus felipeae* sp. n.**
(Fig. 1C, 1D, 3B, 4)

Type material. Holotype, male: ''PHILIPPINES, Panay Island, Antique, Culasi, IV. 2018, local collector leg.'' (white rectangular card, printed); ''HOLOTYPE, Male, *Pachyrhynchus felipeae*, Rukmane 2018, det. Anita Rukmane, 2018'' (red rectangular card, printed) (DUBC).
Paratypes: one male and two females: Panay Island, Antique, Culasi, IV. 2018. (DUBC).

Distribution: Panay Island (Fig. 2).

Description. Male. Measurements (n=2): LB: 12.10–12.75 (holotype: 12.10); LR: 1.20–1.35 (holotype: 1.20); WR: 1.30–1.45 (holotype: 1.30); LP: 2.75–2.95 (holotype: 2.75); WP: 3.05–3.45 (holotype 3.05); LE: 7.15–7.4 (holotype: 7.15). WE: 4.70–4.85 (holotype: 4.70). Dorsal habitus as in Fig. 1C.

Integument black, body surface very shiny except underside with weaker lustre.
Body subglabrous, with dull pale orange markings of recumbent round scales. Head subglabrous. Rostrum in dorsal contour straight, weakly incurved near antennal scrobe, slightly wider than long, WR/LR: 1.08, with fine punctation, with irregular shape impression on medial part of rostrum and pronounced longitudinal groove from medial part of rostrum to forehead; lateroventral parts without or with several general scales and sparse short golden hairs from antennal scrobes to apex; patch of round pale orange scales on genae. Head minutely punctured; forehead squeezed out dorsally, with weak apical impression; eyes relatively large, moderately convex (if see dorsally). Antennae slender; scape weakly incurved ventrally, apical part fur-

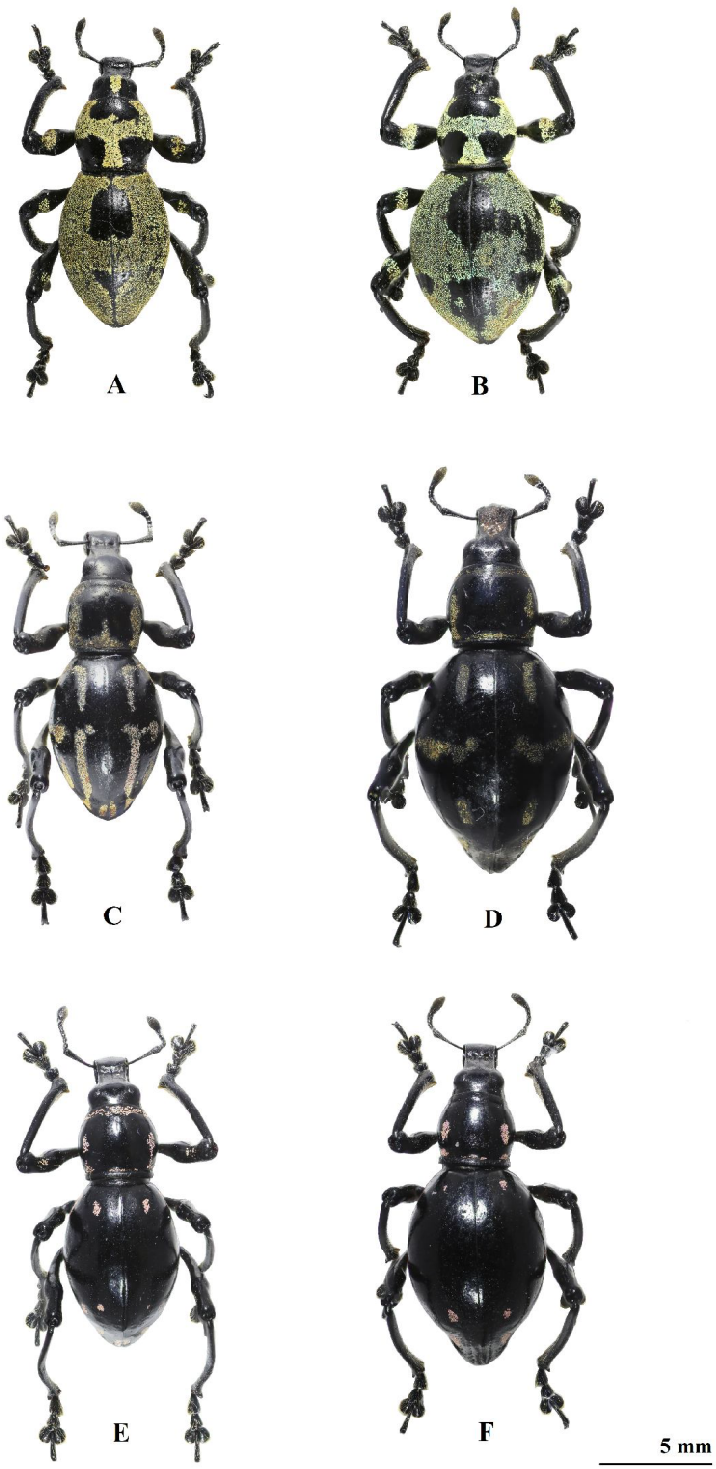

Fig.1:.Dorsal habitus of *P. layroni* (male - A, female - B), *P. felipeae* (male - C, female - D), *P. franciscoi* (male - E, female - F)

Fig2: Distribution of *P. layroni sp. n.* (marked with red), *P. felipeae sp. n.* & *P. franciscoi sp. n.* (marked with green)

nished with long light golden hairs along anterior margin; pedicel slightly longer than segment I; segment I 1.5 times longer than wide, longer than segment II; segments II-V subequal in length, slightly wider than long, nearly twice as short as segment VI. Prothorax nearly as long as wide, WP/LP 1.11; widest slightly before middle; with following markings of recumbent scales: 1) transverse line of scales along apical margin from one lateroventral margin to other; 2) transverse line of scales along basal margin from one lateroventral margin to other; 3) irregular patch of scales on each of lateroventral parts of pronotum; 4) two longitudinal lines on disc each redirected laterally; 5) triangularly shaped patch on median part of basal margin; disc weakly impressed medially. Elytra subellipsoidal, LE/WE: 1.52, wider than prothorax, WE/WP 1.54, more than twice as long as prothorax, LE/LP: 2.6; intervals weakly pronounced; widest in middle; each elytron with the following markings: 1) longitudinal line on

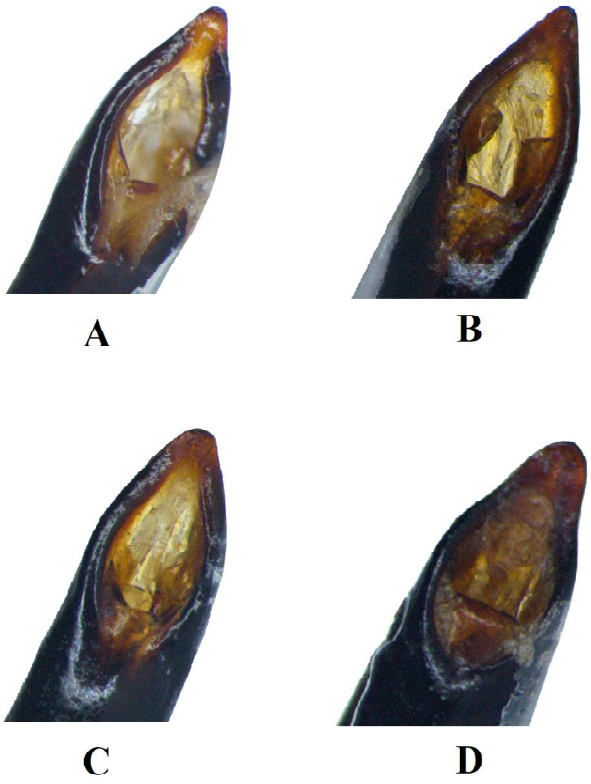

Fig 3: Ostium of *P. negrosensis* (A), *P. felipeae sp. n.* (B), *P. franciscoi sp. n.* (C), *P. layroni sp. n.*(D)

interval III from sub-basal part to just before middle; 2) longitudinal line along lateral margin from sub-basal part to apex; 3) line on interval III and line along lateral margin connected with transverse line on sub-basal part; 4) transverse line on median part from interval II to lateral margin; 5) longitudinal line on interval III from middle of elytron to apex; 6) short longitudinal line on suture near apex; 7) two short longitudinal lines on apical part of interval V and VII. Aedeagus as in Fig. 3B, 4.

Female: Measurements (n=2): LB: 15.25-15.65 (mean 15.45); LR: 1.30–1.40 (mean 1.35); WR: 1.55–1.70 (mean 1.625); LP: 3.05– 3.10 (mean 3.075); WP: 3.80–3.95 (mean 3.875); LE: 9.70–9.9 (mean 9.80). WE: 6.10–6.50 (mean 6.30). Habitus as inFig. 1D.

Differential diagnosis. Based on the general appearance, *P. felipeae* sp.n. is very similar to *P. franciscoi* sp.n. from the same island and *P. negrosensis* Schultze, 1924 from Negros Island. From *P. franciscoi* it differs by long light golden hairs on apical part of antennal scape along anterior margin in males (males of *P. franciscoi* without these hairs), by the shape of theforehead bulged dorsally (forehead of *P. franciscoi* is impressed in medial part), by wider forehead of females (Fig. 1E, 1F), by the different shape of the

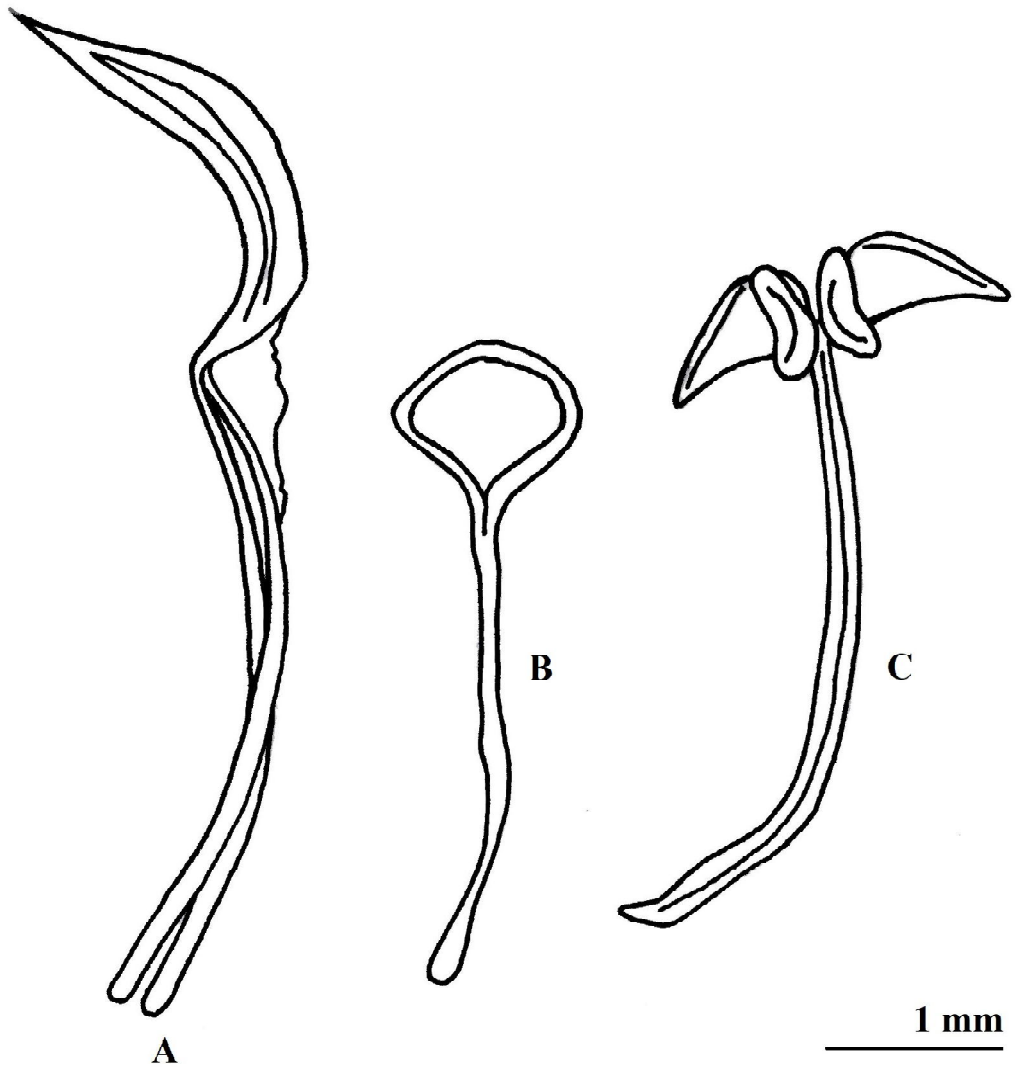

Fig. 4. Dorsal view of aedegal body (A), tegment (B) and segment IX (C) of *P. felipeae sp. n.*

aedeagus and differences of scally markings on elytra (Fig. 3).

Etymology. This species is named after Mari Grace Felipe in appreciation of great support and possibility to process material from Panay Island.

***Pachyrhynchus franciscoi* sp. n.**
(Fig. 1E, 1F, 3C, 5)

Type material. Holotype, male: ''PHILIPPINES, Panay Island, Antique, Culasi, IV. 2018, local collector leg.'' (white rectangular card, printed); ''HOLOTYPE, Male, *Pachyrhynchus franciscoi*, Rukmane 2018, det.

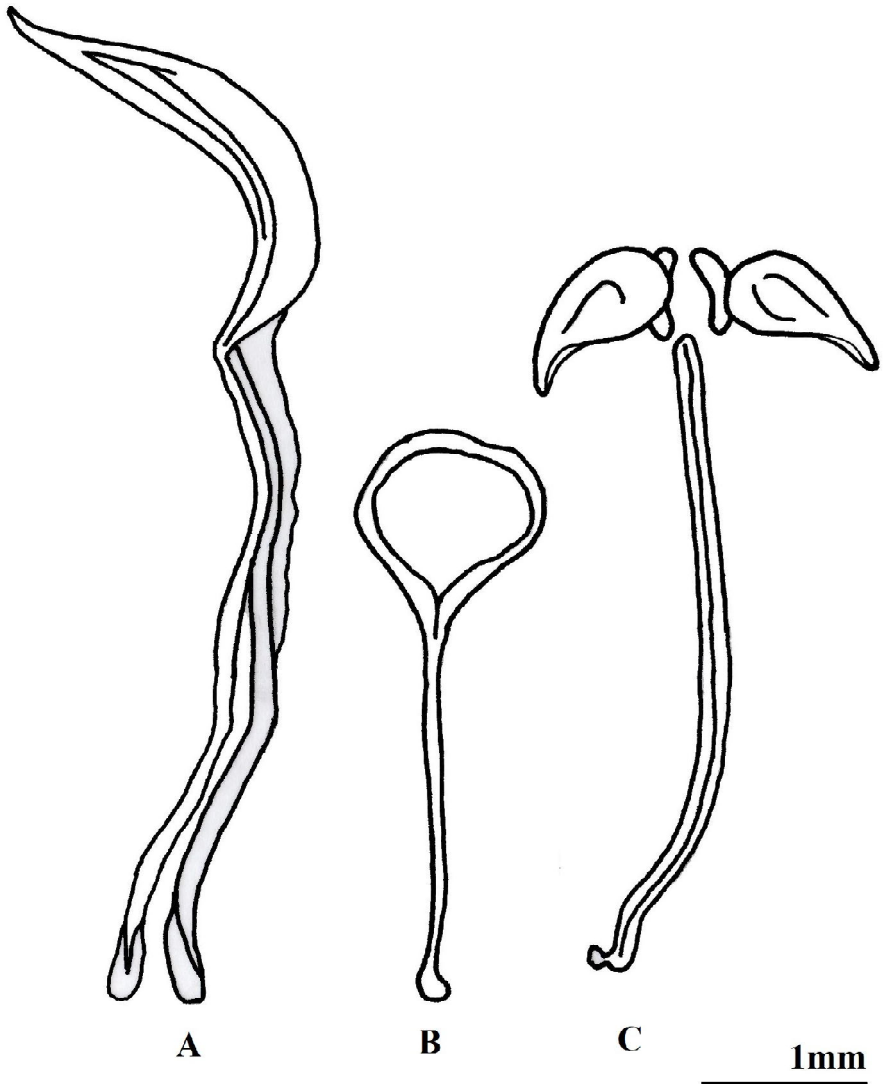

Fig. 5. Dorsal view of aedegal body (A), tegment (B) and segment IX (C) of *P. franciscoi sp. n.*

Anita Rukmane, 2018'' (red rectangular card, printed) (DUBC).

Paratypes: one male and two females: Panay Island, Antique, Culasi, IV. 2018. (DUBC).
Distribution: Panay Island (Fig. 2).

Description. Male. Measurements (n=2): LB: 12.35–12.55 (holotype 12.55); LR: 1.7–1.75 (holotype 1.75); WR: 1.50–1.60 (holotype 1.60); LP: 2.90–2.95 (holotype 2.95); WP: 3.40–3.50 (holotype 3.50); LE: 7.65–7.80 (holotype 7.80); WE: 4.75– 4.90 (holotype 4.90). Habitus as in Fig. 1E.

Integument black, very shiny. Body subglabrous, with dull pale orange to purple markings or round recumbent scales. Rostrum in dorsal

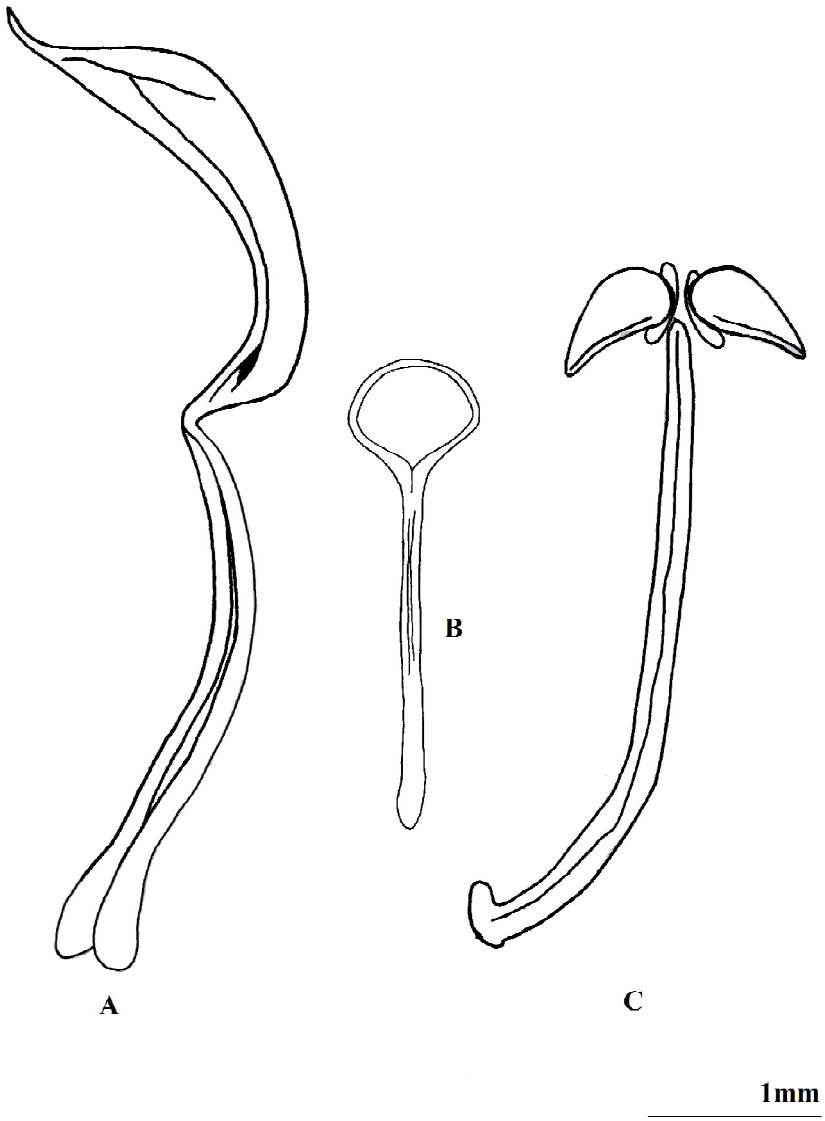

Fig. 6. Dorsal view of aedegal body (A), tegment (B) and segment IX (C) of *P. layroni sp. n.*

contour weakly bulging in apical 1/3, narrowing in median part and straight in basal part; slightly longer than wide, LR/WR: 1.09, with sparse punctation, with subovate impression in medial part and weak longitudinal groove from medial part of rostrum to medial part of forehead; lateroventral parts with oval pale orange scales near antennal scrobe and sparse short golden hairs from antennal scrobe to apex; patch of pale orange scales on genae, scales mingled with hair – like scales. Head more weakly punctured than rostrum; forehead slightly impressed on medial part, not squeezed out dorsally; eyes relatively large, weakly convex (if see dorsally). Antennal

scape flattened in basal part and expanded apically, with very short or almost without hairs in apical part along anterior margin; pedicel nearly as twice as long as wide, 1.5 times longer than segment I; segment I slightly longer than wide, longer than segment II; segments II–V subequal in length, club–shaped; segment VI wider than long. Prothorax wider than long, WP/LP: 1.15, widest before middle; transverse basal groove expanded, thick; markings on prothorax equal to those of *P. felipeae*, but without triangular-shaped patch on medial part of basal margin. Elytra subovate, LE/WE 1.59, wider than prothorax, WE/WP: 1.4, more than twice as long as prothorax, LE/LP: 2.64; smooth; intervals very weakly pronounced; widest just before middle; weak pubescence near apex; each elytron with the following scally markings: 1) round spot of pale orange to purple scales on sub-basal part of interval III; 2) short line of scales along lateral margin from sub-basal part to basal ½; 3) short transverse line on median portion of each elytron, from interval VII to lateral margin; 4) long longitudinal line of scales from median part to subapical part along lateral margin, in subapical part line weakly incurves from lateral margin to interval IV; 5) scally patch on suture near apex; 6) two small round patches in apical 1/3 on interval III and VI. Genitalia as illustrated in Fig. 5.

Female: Measurements (n=2): LB: 13.70–13.90 (mean 13.80). LR: 1.15–1.25 (mean 1.20). WR: 1.45–1.60 (mean 1.525); LP: 2.90–3.00 (mean 2.95); WP: 3.15–3.25 (mean 3.20); LE: 8.60–8.70 (mean 8.65); WE: 5.70–5.80 (mean 5.75). Habitus as in Fig. 1F.

Differential diagnosis. In general appearance, *P. franciscoi* is similar to *P. felipeae* and *P. negrosensis*, differences between species as described above.

Fig .7. Habitus of *Metapocyrtus* sp. that mimics *P. felipeae sp. n.*

Etymology. Species is named after Marino Francisco in appreciation of great support and possibility to process material from Panay Island.

***Pachyrhynchus layroni* sp. n.**
(Fig. 1A, 1B, 3D, 6)

Type material. Holotype, male: ''PHILIPPINES, Panay Island, Antique, Madajaas, XII. 2017, local collector leg.'' (white rectangular card, printed); ''HOLOTYPE, Male, *Pachyrhynchus layroni*, Rukmane 2018, det. Anita Rukmane, 2018'' (red rectangular card, printed).

Paratypes: two females from same locality: XII. 2017; two females and one male: from same locality, I. 2018 (DUBC).

Distribution: Panay Island (Fig. 2).

Description. Male. Measurements (n=2): LB: 11.90–12.30 (holotype: 11.90); LR: 1.30–1.50 (holotype: 1.30); WR: 1.25–1.40 (holotype 1.25); LP: 3.10–3.25 (holotype: 3.10); WP: 3.35 – 3.55 (holotype 3.35); LE: 7.05 – 7.25 (holotype: 7.05); WE: 4.70–4.75 (holotype 4.70). Habitus as in Fig. 1A.

Integument black, very shiny except for elytra and underside with weaker luster. Body with dull pale orange or yellow markings of round recumbent scales. Rostrum in dorsal contour expanded in apical 3/5 and narrowed to base, almost same length as width, LR/WR: 1.04, with sparse punctation and shallow impression from median part to base; lateroventral parts densely covered with oval shape scales and long golden hairs from antennal scrobe to apex; irregular patch of scales on genae and under eyes; patch mingled with short golden hairs. Head roughly punctured; forehead slightly bulging dorsally, width more than two times as wide as width of eye; longitudinal patch of scales along medial line of forehead, patch not reaching base of forehead; eyes relatively small, very weakly convex from outline of head. Antennal scape densely covered with long light hairs in apical part; pedicel slightly longer than wide, slightly longer than segment I; segment I slightly longer than segment II, nearly 1/5 as long as wide; segments II–V subequal in length, club–shaped. Prothorax wider than long, WP/LP: 1.08, widest in middle, with very weak transverse basal groove; with following markings of pale orange or yellow scales: 1) thick transverse line of scales on medial portion of pronotum, on lateral sides line expands and cover lateroventral parts; 2) two patches of scales on apical part of pronotum, each patch redirected laterally, patches covering transverse medial line; 3) longitudinal line on midline of pronotum from basal margin to medial transverse line. Elytra elongated, less than two times as long as wide LE/WE: 1.5, wider than prothorax, WE/WP: 1.4, more than twice as long as prothorax, LE/LP: 2.27; intervals I and II well pronounced, remaining intervals unspoken as they are densely covered with pale recumbent scales; widest just in the middle; with sparse short light hairs from apical 1/3 to apex; nearly all elytra covered with pale orange or yellow scales except: 1) uncovered field from sub-basal part to middle of each elytron on intervals I and II; 2) triangular uncovered field just after midline on intervals I and II. Aedeagus as in Fig. 6, 3D.

Female: Measurements (n=4): LB: 13.45–13.95 (mean 13.75) LR: 1.15–1.30 (mean 1.21); WR: 1.40–1.70 (mean 1.55); LP: 3.00– 3.50 (mean 3.21); WP: 3.30– 3.80 (mean 3.50); LE: 8.00–8.50 (mean 8.25); WE: 5.70– 5.90 (mean 5.80). Habitus as in Fig. 1B.

Differential diagnosis. In general appearance, *P. layroni* sp.n. is similar to *P. orbifer* Waterhouse, 1841 from Luzon Island, but differs by elongated elytra (elytra of *P. orbifer*: rounded), by the presence of longitudinal patche of medial scales on forehead (lacking in *P. orbifer*),by the shorter and less rounded pronotum, , by the more stout legs of *P. layroni*, narrower forehead, less convex eyes, as well as by the different shape of the aedeagus.

Etymology. Species is named after sir Nelson Layron in appreciation of cooperation and possibility to process material from Panay Island.

Mimicry. During observation of ô new materials from Panay Island, new records of Mullerian mimicry between *P. layroni* sp.n. and *Metapocyrtus* sp. were found. Both species inhabits same locality and shows very similar pattern of scales on pronotum and elytra (Fig. 7).

DISCUSSION

Panay is sixth largest island in the Philippines, with a total land area of 12,011 km^2. It is a triangular island, located in the western part of the Visayas. It is located southeast of the Island of Mindoro and northwest of Negros across the Guimaras Strait (Hogan 2011). As sea level dropped during the Pleistocene, species from closely located Mindoro and Negros became isolated. So far, nearly no entomological data were available from Panay Island, but after observation of a new material from this island we can conclude that species that inhabit Negros Island (*P. negrosensis*) are very closely related to species from Panay Island, yet, geographical isolation caused the emergence of new species which were described herein.

ACKNOWLEDGEMENTS

I wish to express my gratitude to Dr. Alexey Shavrin (Daugavpils) for valuable comments and suggestions and to Dr. Maurizio Bollino (Italy) for valuable comments and help. Māris Nitcis (Daugavpils) for help with preparation of maps. Dr. Arvīds Barševskis (Dugavpils) for valuable comments and support. Mam Mari Grace Felipe, sir Marino Francisco and sir Nelson Layron (Philippines) for providing this research with entomological material.

REFERENCES

Anichtchenko, A., 2016. A new species of *Diamella* Shi & Liang, 2013 from the Philippines (Coleoptera: Carabidae: Lebiini), *Baltic J. Coleopterol*., 16(2): 105–108.

Anichtchenko, A., 2017. A peculiar new species of *Diamella* Shi & Liang, 2013 from Samar, Philippines (Coleoptera: Carabnidae: Lebiini), *Baltic. J. Coleopterol.*, 17(2): 125-127.

Barševskis A., 2013. Contribution to the knowledge of the genus Doliops Waterhouse, 1841 (Coleoptera: Cerambycidae), *Baltic J. Coleopterol.*, 13(2), 73–89.

Barševskis A., 2014. New species and new records of the genus Doliops Waterhouse, 1841(Coleoptera: Cerambycidae). *Baltic J. Coleopterol*., 14 (1), 113–135.

Barševskis, A., 2016. New species sf Pachyrhynchus Germar, 1824 and Macrocyrtus Heller, 1912 (Coleoptera: Curculionidae) from the Marinduque Island (Philippines) as a new example of mimetic species pair. *Acta Biol. Univ. Daugavp*., 16 (1)

Barševskis, A., 2017a. Four new species of the Genus *Doliops* Waterhouse, 1841 (Coleoptera: Cerambycidae) from Mindanao Island, Philippines, *Baltic. J. Coleopterol*, 17(1): 69-82.

Barševskis, A., 2017b. Genus *Doliops* Waterhouse, 1841 (Coleoptera: Cerambycidae) from Luzon Island, Philippines, Availible from: http://cerambycidae.org/taxa/DoliopsWaterhouse-1841 (Accessed on 06.06.2017)

Barševskis A., Jaeger O., 2014. Type specimens of the genera Doliops Waterhouse, 1841and Lamprobityle Heller, 1923 (stat. nov.) (Coleoptera: Cerambycidae) and description of two new species deposited in Senckenberg Natural History collections Dresden, Germany. *Baltic J. Coleopterol*, 14(1), 7-19.

Bollino, M. and Sandel, F. 2015. Three new species of the genus Pachyrhynchus Germar, 1824 fromLubang Island (Philippines) (Curculionidae: Entiminae: Pachyrhynchini). *Munis Entomology & Zoology*, 10 (2), 392-401.

Bollino, M., Sandel, F. and Rukmane, A., 2017. New Species of the genus *Pachyrhynchus* Germar, 1824 (Coleoptera: Curculionidae) from Mindanao, Philippines. *Baltic. J. Coleopterol.*, 17(2): 189-204.

Cabras A. and Rukmane A., 2016. A New Species of *Pachyrhynchus* Germar, 1824 (Coleoptera: Curculionidae: Entiminae). *Acta Biol. Univ. Daugavp.*, 16(1): 123-127

Hogan, M., C., 2011. SulU Sea, Encyclopedia of Earth, *Eds. P. Saundry & C. J. Cleveland*. Washington DC

Rukmane, A. and Barševskis, A., 2016. Nine new species of the genus *Pachyrhynchus* Germar, 1824 (Coleoptera: Curculionidae) from the Philippines. *Baltic J. Coleopterol.*, 16 (1): 77–96.

Received: 15.06.2018.
Accepted: 31.07.2018.
Published: 10.09.2018.