

Two new species of the genus *Pachyrhynchus* (Coleoptera: Curculionidae: Pachyrhynchini) from Mindanao, Philippines

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Two new species belonging to genus *Pachyrhynchus* are described from Mindanao Island: *P. sergejevae* sp. n. Rukmane, 2018; *P. torresi* sp. n. Rukmane, 2018. Pictures and description of habitus are added, together with distribution maps for both of species. Male genitalia and female terminalia are illustrated.

Key words: Coleoptera, Curculionidae, *Pachyrhynchus*, fauna, taxonomy, new species, Mindanao Island, Philippines

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INTRODUCTION

The genus *Pachyrhynchus* Germar, 1824 (Coleoptera: Curculionidae) belongs to the subfamily Entiminae, tribe Pachyrhynchini that comprises 15 genera mainly from the Philippines (Alonso-Zarazaga & Lyal 1999). Members of the genus *Pachyrhynchus* are wingless, have conspicuous, sometimes peculiar patterns of brightly colored scales, often with strong intraspecific variation between local populations. Some described species have similar coloration and setting of bright spots and scales similar as the some members of the genus *Doliops* Waterhouse, 1841 (Cerambycidae: Lamiinae); data about mimicry between species of *Pachyrhynchus*, *Metapocyrtus* and *Doliops* were provided by Starr & Wang (1992), Barševskis (2013, 2014, 2016, 2017) and Barševskis & Jaeger (2014).

The genus *Pachyrhynchus* is represented in the Oriental fauna by 145 species (Rukmane 2018),

distributed mainly in Oriental region, and is a good example of taxa with restricted distributions and great zoogeographical significance (Link & Zettel 2012). The genus has attracted attention of entomologists, and many new species has been described recently: Bollino & Sandel (2015), Rukmane & Barševskis (2016), Cabras & Rukmane (2016), Chen & Lin (2017).

During the study of large material from the Philippines on the genus *Pachyrhynchus* which is deposited in Daugavpils University institutional collection (DUBC), two new species were found from Mindanao Island. Previous studies on genus *Pachyrhynchus* showed that several species shows morphological relationships with different group of insects and share particular combination of morphological characters (Bollino, Sandel & Rukmane 2017). Species described herein show high resemblance to *P. atrocyaneus* Schultze, 1922, in order with other

species: *P. caeruleovittatus* Yoshitake, 2012, *P. gilvomaculatus* Yoshitake, 2017, *P. hirokii* Yoshitake, 2012, *P. naokii* Yoshitake, 2012. The goal of this paper is to give descriptions of these two species.

MATERIALS AND METHODS

The studied material is deposited in the following collections:

DUBC - the beetles collection of Daugavpils University, Institute of Life Sciences and Technology, Coleopterological Research Centre, Ilgas, Daugavpils District, Latvia (A. Barševskis);

SMTD - Senckenberg Naturhistorische Sammlungen Dresden, Germany, Dresden, Germany (K. Klass).

The laboratory research and measurements follows previous works of the author (Rukmane & Barševskis 2016; Rukmane 2016).

RESULTS

Pachyrhynchus sergejevae sp. n.
(Fig. 1C, F)

Type material. Holotype, male: "PHILIPPINES, Mindanao Island, Bukidnon, Cabanglasan, VIII. 2014, local collector leg." (white rectangular card, printed); "HOLOTYPE, Male, *Pachyrhynchus sergejevae* Rukmane 2018, det. Anita Rukmane, 2018" (red rectangular card, printed) (DUBC).

Paratypes: 1 male, 3 females; "PHILIPPINES, Mindanao Island, Bukidnon, Cabanglasan, IX. 2016, local collector leg." (white rectangular card, printed); "PARATYPE, Male, *Pachyrhynchus sergejevae* Rukmane 2018, det. Anita Rukmane, 2018" (red rectangular card, printed);

"PHILIPPINES, Mindanao Island, Bukidnon, Mt. Kalatungan, VII.2014, local collector leg." (white rectangular card, printed); "PARATYPE, Female, *Pachyrhynchus sergejevae* Rukmane 2018, det. Anita Rukmane, 2018" (red rectangular card, printed);

"PHILIPPINES, Mindanao Island, Bukidnon, Intavas, VII.2014, local collector leg." (white rectangular card, printed); "PARATYPE, Female, *Pachyrhynchus sergejevae* Rukmane 2018, det. Anita Rukmane, 2018" (red rectangular card, printed);

"PHILIPPINES, Mindanao Island, Bukidnon, Mt. Intavas, VIII.2014, local collector leg." (white rectangular card, printed); "PARATYPE, Female, *Pachyrhynchus sergejevae* Rukmane 2018, det. Anita Rukmane, 2018" (red rectangular card, printed); all in DUBC.

Distribution: Mindanao Island (Fig. 2).

Description. Male. Measurements (n = 2): LB: 13.9 - 14.2 (holotype 13.9); LR: 1.9 - 2.1 (holotype 2.1); WR: 1.5 - 1.8 (holotype 1.8); LP: 3.5 - 3.9 (holotype 3.5); WP: 3.4 - 3.6 (holotype 3.4); LE: 7.6 - 7.9 (holotype 7.6); WE: 5.1 - 5.3 (holotype 5.1). Dorsal habitus as in Fig. 1F.

Integument dark brown, coppery, or almost black, body surface including underside very shiny. Body subglabrous, with dull pale green markings of recumbent scales. Head subglabrous. Rostrum in dorsal contour nearly straight, with weak bulge in apical part, slightly incurved in median part, longer than wide, LR/WR: 1.16, minutely punctured, weak bulge in apical ½, impression from apical ½ with peak on the midline, extending to basal ¾; longitudinal groove along midline of rostrum from apical ½ to basal ¾, transverse groove in median part of rostrum; lateroventral parts with few general scales from antennal scrobes to apex; short scale □ like hairs near antennal scrobe and long golden hairs near apex; patch of round pale green scales along with short, golden hairs on genae. Head minutely punctured; forehead weakly bulging dorsally, with patch of scales between eyes; eyes small, weakly convex (if see

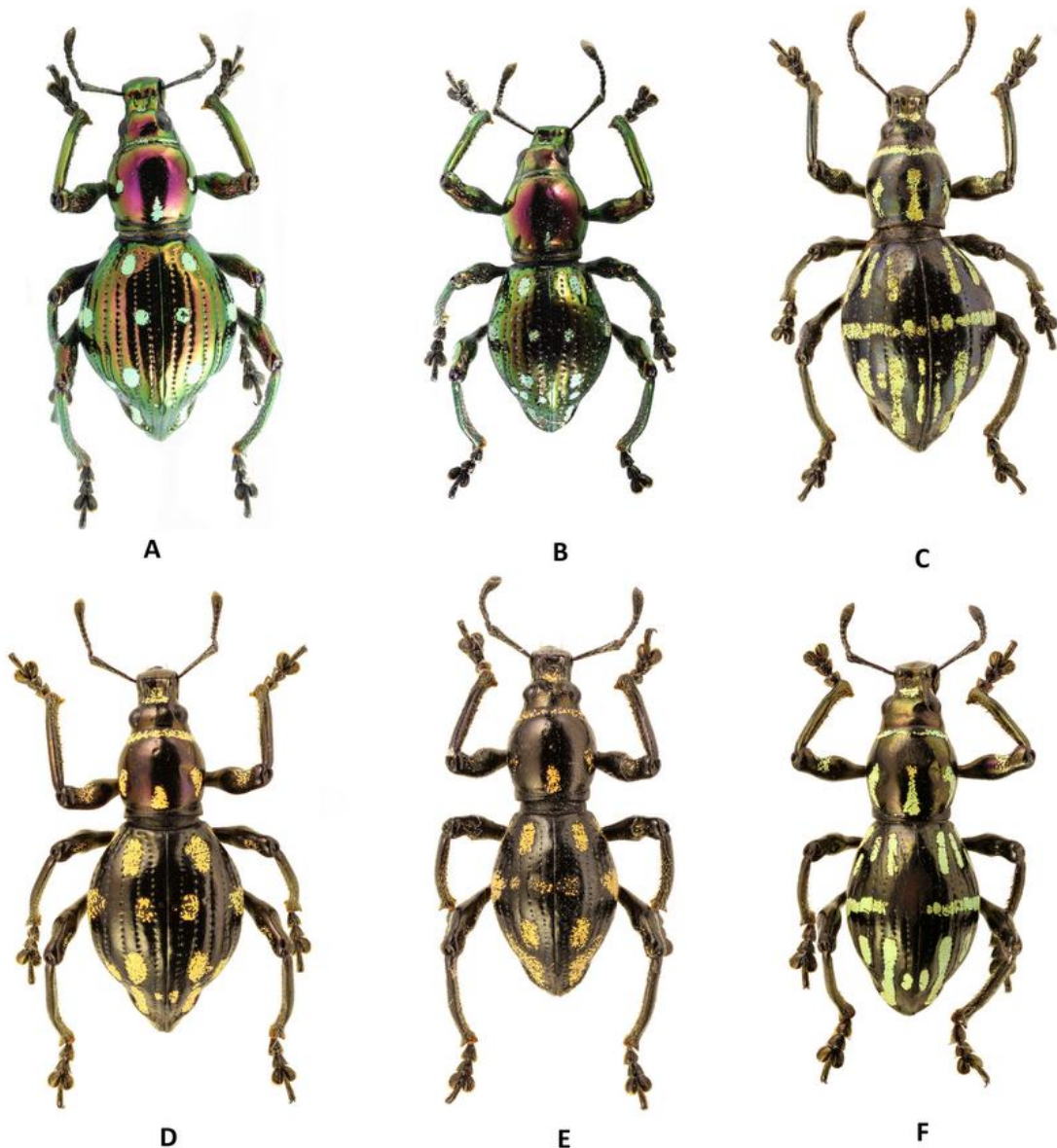


Fig. 1. Dorsal habitus of *Pachyrhynchus* species: A - female of *P. atrocyaneus* Schultze, 1922; B - male of *P. atrocyaneus* Schultze, 1922; C - female of *P. sergejevae* sp. n.; D - female of *P. torresi* sp. n.; E - male of *P. torresi* sp. n.; F - male of *P. sergejevae* sp. n.

dorsally). Antennae slender, scape straight, bulging apically, apical part furnished with long lighthairs from medial part to anterior margin; pedicel same length as segment I, nearly twice as long as wide; segment I twice as long as wide, 2.5 times longer than segment II; segments II - V gradually increasing in length, segment II

nearly 4 times shorter than segment VI, segment V nearly 3 times shorter than segment VI. Prothorax nearly as wide as long, LP/WP: 1.03; widest slightly before midline; with following markings of recumbent scales: 1) transverse line of scales along apical margin from one lateroventral margin to other; 2) longitudinal line



Fig. 2. Distribution map of *P. sergejevae* sp. n. (marked with red) and *P. torresi* sp. n. (marked with green).

in median part from basal margin to middle of prothorax; 3) two longitudinal lines from basal margin to middle of pronotum, each laterally from medial line of scales; patch of scales on each of latero-ventral margins; disc with weak impression on medial part. Elytra sub ellipsoidal, LE/WE: 1.49, wider than prothorax, WE/WP: 1.5, more than twice as long as prothorax, LE/LP: 2.17; intervals well pronounced; widest in middle, with bulge in sub-apical part before apex; each elytron with the following markings: 1) three longitudinal lines from base to basal 1/2 of interval 3, 5 and 7; 2) longitudinal line along lateral margin from base to apex; 3) transverse line in median part from lateral margin to suture; 4) longitudinal line on middle of basal part of interval I; 5) longitudinal line along interval III from apical 1/5 to apex; 6) longitudinal line along interval V; 7) longitudinal line along interval VII. Genitalia as in Fig. 3A-D.

Female: Measurements (n = 3): LB: 13.2 - 14.3 (mean 13.63); LR: 1.7 - 1.9 (mean 1.8); WR: 1.4 - 1.6 (mean 1.5); LP: 3.2 - 3.6 (mean 3.37); WP: 3.2 - 3.5 (mean 3.4); LE: 7.2 - 8.1 (mean 7.53); WE: 5.5 - 6.3 (mean 5.93). Sternite IV and V densely covered with general scales. Habitus as in Fig. 1C. Terminalia as in Fig. 3E-G.

Differential diagnosis. According to general appearance and pattern of scale lines on body, *P. sergejevae* sp. n. is similar to *P. cumingi* Waterhouse, 1841, *P. shavrini* Rukmane & Barševskis, 2016 and *P. anitchchenkoi* Rukmane & Barševskis, 2016, but after careful morphological analyses and comparison of male genitalia, it is clear that *P. sergejevae* sp. n. is more closely related to *P. atrocyaneus*. *P. sergejevae* sp. n. clearly differs from *P. atrocyaneus* with following features: shape of male aedeagal body (see Fig. 4); elytra of *P. sergejevae* sp. n. is more extended and slender, on other hand, elytra of *P. atrocyaneus* is shorter and more rounded; different pattern of scale lines (see Fig. 1A, B); pronotum of *P. atrocyaneus* more rounded, widest in middle, pronotum of *P. sergejevae* sp. n. widest before midline.

Etymology. This species is named after Agnese Sergejeva (Latvia), great friend of author, in appreciation of support, trust and loyalty through many years of friendship.

***Pachyrhynchus torresi* sp. n.**
(Fig. 1D, E)

Type material. Holotype, male:
"PHILIPPINES, Mindanao Island,

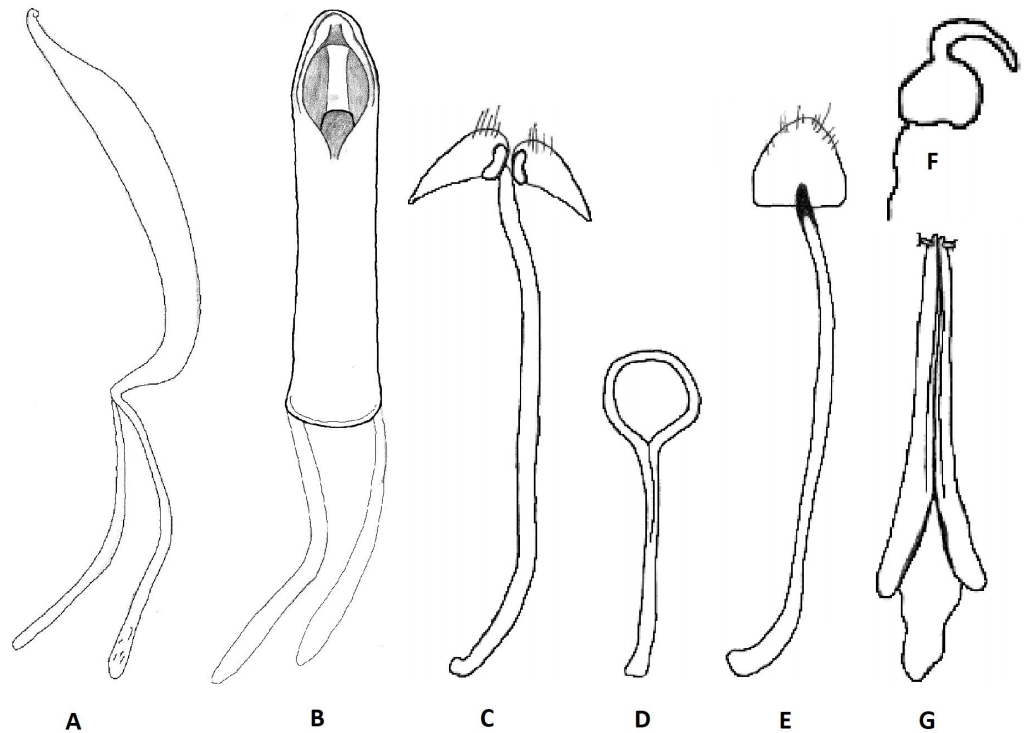


Fig. 3. Male genitalia and female terminalia of *P. sergejevae* sp. n.: A - penis indorsalview; B - penis inlateralview; C - sternite IX in dorsal view; D - tegmen in dorsal view; E - sternite VIII inventralview; F - spermatheca; G - ovipositor in dorsal view

Zamboanga, Labuan, I. 2018, local collector leg.” (typed on white card, printed); “HOLOTYPE, Male, *Pachyrhynchus torresi* Rukmane 2018, det. Anita Rukmane, 2018” (red rectangular card, printed) (DUBC).

Paratypes: 8 males, 5 females; “PHILIPPINES, Mindanao, Zamboanga, Labuan, I. 2018, local collector leg.” (white rectangular card, printed); “PARATYPE, Male, *Pachyrhynchus torresi* Rukmane 2018, det. Anita Rukmane, 2018” (red rectangular card, printed) (5 pcs.); “PHILIPPINES, Mindanao Island, Zamboanga, Labuan, II.2018, local collector leg.” (white rectangular card, printed); “PARATYPE, Male, *Pachyrhynchus torresi* Rukmane 2018, det. Anita Rukmane, 2018” (red rectangular card, printed) (3 pcs.); “PHILIPPINES, Mindanao, Zamboanga, Labuan, I. 2018, local collector leg.” (white rectangular

card, printed); “PARATYPE, Female, *Pachyrhynchus torresi* Rukmane 2018, det. Anita Rukmane, 2018” (red rectangular card, printed) (3 pcs.);

“PHILIPPINES, Mindanao Island, Zamboanga, Labuan, II.2018, local collector leg.” (white rectangular card, printed); 287 PARATYPE, Female, *Pachyrhynchus torresi* Rukmane 2018, det. Anita Rukmane, 2018 (red rectangular card, printed) (2 pcs.).

Distribution: Mindanao Island (Fig. 2).

Description. Male. Measurements (n=9): LB: 12.1 - 13.3 (holotype 13.3, mean 12.5); LR: 1.7 - 1.9 (holotype 1.8, mean 1.79); WR: 1.4 - 1.5 (holotype 1.5, mean 1.47); LP: 2.9 - 3.4 (holotype 3.4, mean 3.16); WP: 2.9 - 3.4 (holotype 3.4, mean 3.12); LE: 6.5 - 7.3 (holotype 6.9, mean 6.82); WE: 4.3 - 5.0

(holotype 4.8, mean 4.69). Dorsal habitus as in Fig. 1F.

Integument black, body surface shiny, underside with weaker lustre. Body subglabrous, with dull pale orange markings of recumbent round scales. Head subglabrous. Rostrum in dorsal contour nearly straight, narrow on apex, weakly extending to middle, in the middle weakly incurved, bulging to basal part and narrows at the base, wider than long, LR/WR: 1.2; longitudinal medial groove from apical ½ to middle of forehead; deep oval shape impression on basal part; oval shape patch of round pale orange scales on the basal part of the rostrum; lateroventral parts densely covered with general scales all long, with most on genae; on genae and near antennal scrobes short golden hairs, long golden hairs near apex. Head minutely

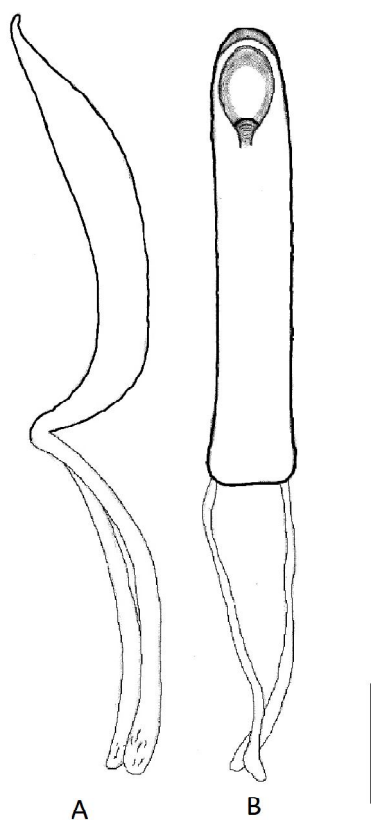


Fig. 4. Male genitalia of *P. atrocyaneus* Schultze, 1922: A - penis in dorsal view; B - penis in lateral view

punctured; forehead moderately squeezed out; eyes relatively large, rather strongly convex from the outline of the head. Antennae slender; scape furnished with long, light hairs from medial part to apex, with most near apex along anterior margin; pedicel same length as segment I, nearly twice as long as wide; segment I nearly twice as long as wide, 2.5 times longer than segment II; segments II - V sub equal in length, as long as wide, segment VI 1.5 times longer than segment V, slightly longer than wide. Prothorax with equal length and width, LP/WP: 1; widest slightly before middle; with following markings of recumbent scales: 1) transverse line or pale orange scales along apical margin from one lateral margin to other; 2) spot in the middle of basal margin on disc; 3) two spots on medial part of disc, each redirected laterally; 4) oblong patch along each lateroventral margin. Elytra subelipsoidal, widest slightly before middle, LE/WE: 1.44, wider than prothorax, WE/WP 1.41, as twice as long as prothorax, LE/LP: 2.03; intervals well pronounced; each elytron with the following markings: 1) patch of scales in sub basal part of interval III; 2) patch of scales on the medial part from suture to interval II; 3) patch of scales on the medial part of interval IV to VI; 4) patch of scales on apical ½ of interval III; 5) longitudinal line along lateral margin all long; 6) triangular shape patch of scales near apex. Genitalia as in Fig. 5A-D.

Female: Measurements (n=5): LB: 12.9 - 13.6 (mean 13.16); LR: 1.7 - 1.9 (mean 1.8); WR: 1.4 - 1.6 (mean 1.52); LP: 2.9 - 3.1 (mean 3.02); WP: 3.1 - 3.2 (mean 3.14); LE: 7.3 - 8.1 (mean 7.78); WE: 5.2 - 5.7 (mean 5.4). Habitus as in Fig. 1D. Terminalia as in Fig. 5E-G.

Differential diagnosis. *P. torresi* sp. n. in general appearance is similar to *P. atrocyaneus*, but clearly differs by the following features: 1) shape of male aedeagal bogy (Fig. 4); 2) prothorax of *P. torresi* sp. n. less rounded up, widest just before middle, prothorax of *P. atrocyaneus* widest in the middle; 3) rostrum of *P. torresi* sp. n. without transverse groove in medial part; 4) eyes of *P. torresi* sp. n. bigger, more convex of the outline of the head.

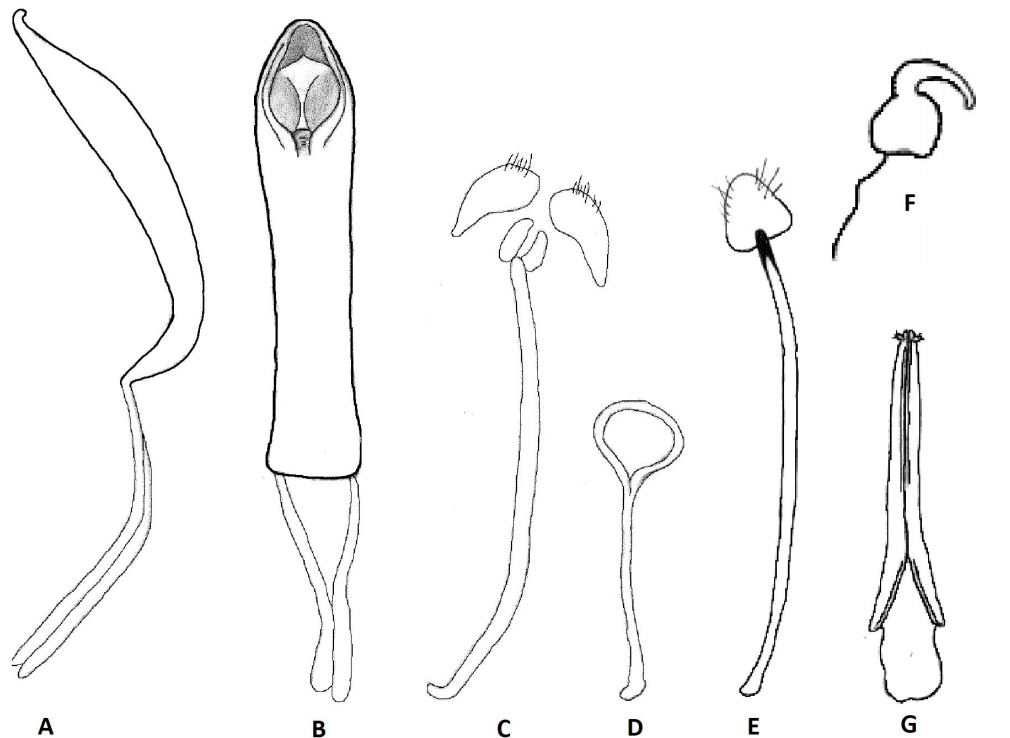


Fig. 5. Male genitalia and female terminalia of *P. torresi* sp. n.: A - penis indorsalview; B - penis in lateral view; C - sternite IX in dorsal view; D - tegmen in dorsal view; E - sternite VIII in ventral view; F - spermatheca; G - ovipositor in dorsal view

Etymology. This species is named after president of University of Mindanao Dr. Guillermo P. Torres Jr in appreciation of support and organisation of warm welcome during Daugavpils University entomologists delegation visit to University of Mindanao.

habitus of *P. möllendorffi* type specimen from SMTD. I would like to add reference to following picture, and note that picture is taken from Dr. Maurizio Bollino (Italy) private collection, and also I would like to express my deepest apology for making such mistake.

NOTE

In the following paper author would like to add some changes to one of her previous papers: 289 New and additional notes on the distribution of *Pachyrhynchus möllendorffi* Heller, 1899 (Coleoptera: Curculionidae), with a description of a new subspecies from the Marinduque Island (Philippines) which relies on figure 2: 289 Dorsal and lateral

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