

Three new species of the genus *Doliops* Waterhouse, 1841 (Coleoptera: Cerambycidae)

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Three new species of the genus *Doliops* Waterhouse, 1841 (Coleoptera: Cerambycidae) from Philippines are described and illustrated: *D. marifelipeae* sp. nov. and *D. racsi* sp. nov. from Luzon, and *D. legalovi* sp. nov. from Mindanao. The genus *Doliops* in the world fauna is now represented by 69 species and subspecies.

Key words: Coleoptera, Cerambycidae, *Doliops*, fauna, new species, taxonomy, Philippines

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INTRODUCTION

The beetle fauna of the Philippine Archipelago is still insufficiently studied. The huge number of new species of beetles from the Philippines have been discovered and described each year. This also applies to long-horned beetles (Cerambycidae). At a time when the rainforest area in the Philippines is rapidly decreasing, discoveries and the protection of new species are very important.

The genus *Doliops* Waterhouse, 1841 belongs to the tribe Apomecyni Lacordaire, 1872 and subfamily Lamiinae Latreille, 1825. Species of this genus are distributed in the Philippines and in the Taiwan archipelagos. In recent years, 26 new species and subspecies of *Doliops* have been described (Barševskis 2013, 2014, 2017a, 2017b, 2018; Barševskis & Jaeger 2014; Cabras &

Barševskis 2016; Yoshitake & Yamasako, 2016, 2018a, 2018b; Vives 2013, 2014).

The aim of the present study is descriptions of three new additional species of the genus from the Philippines: two species from Luzon Island, and one species from Mindanao. Thus, the genus *Doliops* is now represented in the world fauna by 69 species and subspecies.

MATERIAL AND METHODS

The studied type specimens are deposited in the collection of the Daugavpils University, Coleopterological Research Center (DUBC; Ilgas, Daugavpils District, Latvia). All specimens used in this research have been collected in the Philippines by local collectors.

The laboratory research and measurements have been made by *Nikon AZ100*, *Nikon SMZ745T* and *Zeiss Stereo Lumar V12* digital stereomicroscopes, *NIS-Elements 6D* software, and *Canon 60D* and *Canon 1 Ds Mark II* cameras.

The microtomographic scans were carried out using *Zeiss Xradia 510 versa* system, and later were performed with polychromatic X-ray beam at the energy of 30kV and power 2 W. Sample-detector distances were set to 89;174 mm and source to sample distances 25; 25 mm for *D. marifelipeae* (holotype), *D. marifelipae* (paratype) respectively. Tomographic slices were generated from 1601 rotation steps through 360-degree rotation using 0,4X objective, exposure time during each projection was set to 20;6 seconds respectively. Acquired images were binned (2x2x2) for both specimens, obtained voxel sizes were 15;8,6 µm respectively. Images were imported into *Dragonfly PRO* (ver. 4.1) software platform for interactive segmentation and 3D visualization.

RESULTS

Doliops marifelipeae Barševskis & Kairišs, sp. n.

(Fig. 1A, B, C, D)

Type material. Holotype: male: Philippines: Luzon isl., / Bulos Point, Cagayan, / 12.2018, local collector leg. [printed label]; HOLOTYPUS: / *Doliops marifelipeae* sp. n. / A.Barševskis det. 2019 [printed & handwritten red label] (DUBC) (Fig. 1A).

Paratype: male: Philippines: Luzon isl., / Bulos Point, Cagayan, / 12.2018, local collector leg. [printed label]; PARATYPUS: / *Doliops marifelipeae* sp. n. / A.Barševskis det. 2019 [printed & handwritten red label] (DUBC) (Fig. 1B, C)

Distribution. Philippines: Luzon Island.

Description. Body black, with metallic luster. Elytra with small spots of pink scales, variable in color and drawing shape. Body length: 10.6–10.8 mm, largest width: 4.5–4.8 mm.

Head almost square, somewhat parallel-sided, with large, but not strongly extended, bilobate eyes. Anterior portion of head between eyes and antennal bases with impressed longitudinal band of pale pink scales, and thin, straight median line. Frontal part of head behind of clypeus convex, glossy, with impressed longitudinal line, delicate punctation and pubescence. Longitudinal band of pink scales in holotype starting from basal part of head and extending to anterior margin of eyes; this band is truncated in paratype and starting between antennal bases. Posterior portion of head with golden shiny. Cheeks under eyes with very small rudimental spot (holotype) or without spot of pink scales (paratype). Lateral portions of mandibles and genae with four to five long, black setae. Labrum convex, glossy, with concaved apical margin, with pubescence, small punctures, and covered with long setae. Clypeus short, shiny, transverse. Head with very fine microsculpture, punctation and fine tomentum (except of metallic shiny basal portion of head). Basal area of antennae weakly protruding. Antennae long and slender, with short pubescence and a brush of inner setae at apex of antennomere 3, and with some long setae at remaining antennal segments, except of four apical antennomeres; antennomeres 1 and 2 with strong metallic luster and very fine pubescence; antennomere 3 black, with dark-brown basal portion, widened apically; antennomere 4 testaceous basally and darkened apically, with very fine pubescence; remaining antennomeres testaceous and tomentose.

Pronotum very convex, subcylindrical, wider than long, anterior border prominent, posterior border double, sinuous, disc anteriorly bulging; black (holotype) or metallic golden (paratype), shiny, with fine microsculpture and very fine punctation in holotype or with fine punctation in paratype. Disc of pronotum glossy, shiny. Lateral margins of pronotum with band of pink scales; posterior portion of pronotum with small rudimental spots (holotype); paratype with only

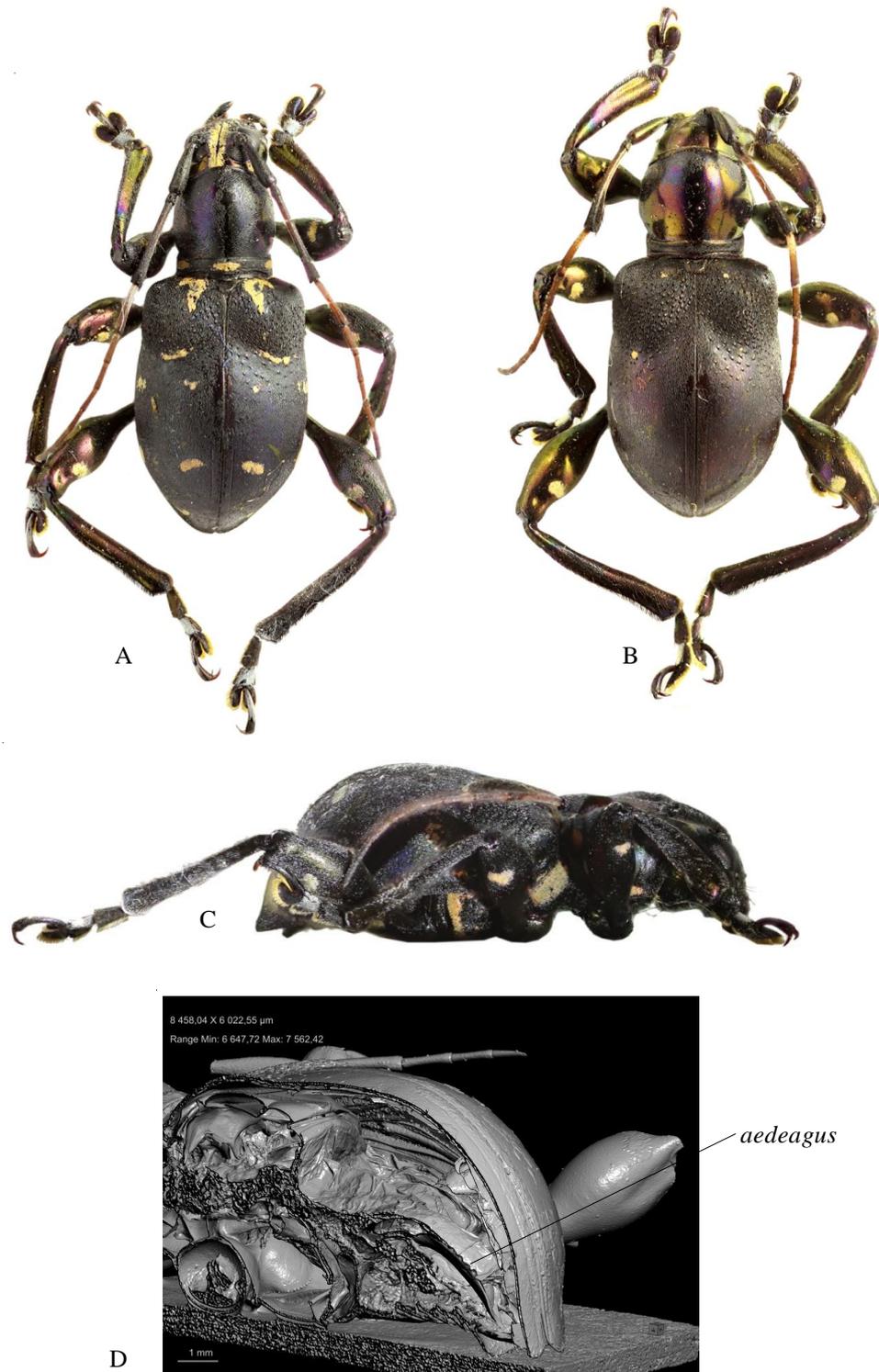


Fig. 1. *Doliops marifelipeae* sp. n.: A – holotype (dorsal view), B – paratype (dorsal view), C – paratype (lateral view), D - aedeagus inside abdominal cavity)

two small rudimental spots in lateral margins of pronotum.

Scutellum widely rounded apically, shiny and tomentose, black. *Pars stridens* not visible.

Elytra convex, black, with metallic luster and spots of pink scales. Each elytron of holotype with curved hook-shaped spot in basal portion; each elytron of paratype with small rudiment of this basal spot, behind which elytra with some small irregular spots of pink scales. Lateral sides of elytra with somewhat protruding shoulders. Width of elytra at shoulders: 4.0–4.5 mm. Largest width of elytra behind middle: 4.5–4.8 mm. Elytra with very fine microsculpture and very fine sparse punctures, with sparse and coarse punctures and pubescence in anterior portion. Mesosoma, metaepimera and sternites spotted laterally, covered with pink scales. Legs short and robust. Femora strongly widened at apical third, shiny, with strong, golden metallic luster, and with small elongate pink spot at apex, more or less pubescent. Tibia flattened at external border, with fringe of dark setae. Dorsal surface of tarsomeres covered by pale pubescence with blue luster. Apical portions of tibia and tarsi covered by row of numerous yellow setae.



Fig. 2. *Doliops elcanoï* Vives, 2011

Male. Aedeagus (Fig. 1D) arched, with upwarded sharp apex. Aedeagus is located obliquely within abdomen, with apex rotated down.

Differential diagnosis. Regarding the general shape of the body and somewhat similar coloration, the new species is related to *D. elcanoï* Vives, 2011 (Fig. 2), known also from Luzon island. It can be distinguished from this species by the following characters: 1) basal part of head with golden luster, while that in *D. elcanoï* with black or greenish luster; 2) each elytron behind basal hook-shaped spot with some small irregular pink spots, while that in *D. elcanoï* with (-shaped transverse bands; 3) basal portion of femora with more smaller and more rounded scale spot than that in *D. elcanoï*.

Etymology. Patronymic, the species is named after Mari Felipe (Philippines: Calumpit), who kindly donated type specimens for this study.

***Doliops racsi* Barševskis sp. n.**

(Fig. 3A, B, C)

Type material. Holotype: male: Philippines: Luzon isl., / Ilocos North, Adams, / 07.2019, local collector leg. [handwritten label]; HOLOTYPUS: / *Doliops racsi* sp. n. / A.Barševskis det. 2019 [printed & handwritten red label] (DUBC).

Paratypes: 1 males, 4 females: Philippines: Luzon isl., / Ilocos North, Adams, / 08.2019, local collector leg. [handwritten label] (DUBC); Philippines: Luzon isl., / Ilocos North, Adams, / 08.2019, local collector leg. [printed label] (DUBC); Philippines: Luzon isl., / Ilocos North, Adams, / 09.2019, local collector leg. [printed label] (DUBC); Philippines: Luzon isl., / Ilocos North, Adams, / 08.2019, local collector leg. [printed label] (DUBC); Philippines: Luzon isl., / Ilocos North, Adams, / 08.2019, local collector leg. [printed label] (DUBC). All paratypes with additional red, printed and handwritten label: PARATYPUS: / *Doliops racsi* sp. n. / A.Barševskis det. 2019.

Distribution. Philippines: Luzon Island.

Description. Body black, with metallic luster. Elytra with spots of green and golden scales. Body length: 11.6–11.9 mm, largest width: 4.6–4.8 mm.

Head almost square, parallel-sided, with not extended bilobate eyes. Middle portion of head between eyes with wide, impressed longitudinal band of green scales, and thin, straight median line. Frontal part of head behind of clypeus convex, glossy, with impressed longitudinal line, delicate punctation and pubescence. Longitudinal band of green scales starting from base of head, extending to level of middle length of eyes. Posterior portion of head glossy, bronze-colored. Cheeks under eyes with spot of green scales. Mandibles massive, furnished with some long black setae laterally. Labrum black, convex, glossy, concaved frontally, with pubescence, small punctures, and covered with long setae. Clypeus dark, shiny, transverse. Head with very fine microsculpture, punctation and fine tomentum (except metallic shiny posterior portion of head). Basal area of antennae weakly protruding. Antennae long and slender, with very fine pale pubescence and a brush of setae internally at apex of third and with some long setae at following antennal segments, except last three – four apical segments. Anennomeres 1 and 2 with metallic luster and very fine pale pubescence; antennomere 3 black, with dark-brown basal portion; antennomere 4 testaceous basally and darkened apically, with very fine pubescence; remaining segments testaceous and tomentose.

Pronotum convex, subcylindrical, wider than long, anterior border prominent, posterior border double, sinuous, disc anteriorly bulging; metallic bronze-colored, shiny, with fine transverse microsculpture, stronger in anterior and posterior portions. Pronotal disc glossy, shiny. Pronotum with band of green and golden-colored scales on lateral margin and around posterior and anterior angles of pronotum, widely interrupted dorsally on anterior and posterior margins, on which with some small rudimental green spots.

Scutellum widely rounded apically, shiny and tomentose, black. *Pars stridens* not visible.

Elytra convex, black, with bronze metallic luster and spots of pink scales. Basal portion of each elytron around scutellum with large wide spot of green scales, emarginated with golden scales and connected with similar wide, transverse bent spot. Apical part of each elytron with three rounded spots of similar scales. Preapical spot near suture connected with transverse, wide, green band with thin line of greenish scales. Width of elytra at shoulders: 4.1–4.3 mm. Largest width of elytra behind middle: 4.6–4.8 mm. Elytra with very fine microsculpture and sparse punctures, anterior portion of elytra with sparser and coarser punctures and pubescence. Meso-, metaepimera and sternites spotted laterally, covered with green scales and emarginated with golden scales. Legs short and robust. Femora strongly widened at basal third, shiny, with metallic luster and with small elongate green spot near apex, pubescent. Tibia flattened at external border, with fringe of dark setae. Dorsal surface of tarsomeres covered by pale pubescence. Tibia and tarsi in apical part covered by row of numerous yellow setae.

Male genitalia. Male aedeagus arched, with upwarded sharp apex.

Differential diagnosis. Based on the general shape of the body, the new species is similar to *D. metallica* Breuning, 1938 (Fig. 4), also known from Luzon, from which it can be distinguished by the following characters: 1) each elytron behind wide, transverse bent spot with three rounded and distinctly isolated green preapical spots, while that in *D. metallica* with in preapical part mostly covered with scales only with some small, black, smooth areas without scales; 2) pronotum emarginated with band of green and golden-colored scales on lateral margin and around posterior and anterior angles of pronotum, while that in *D. metallica* covered mostly with metallic scales, except dorsal disc of the pronotum.

Etymology. Patronymic, the species is named in honor of outstanding Latvian musician and poet Guntars Račs, highlighting his contribution to the Latvian culture.

***Doliops legalovi* Barševskis sp. n.**

(Fig. 5)

Type material. Holotype: female: Philippines: Mindanao isl., / Siocon, Zamboanga del Norte, / 04.2019, local collector leg. [handwritten label]; HOLOTYPE: / *Doliops legalovi* sp. n. / A.Barševskis det. 2019 [handwritten red label] (DUBC).

Paratypes: 1 female: Philippines: Mindanao isl., / Siocon, Zamboanga del Norte, / 08.2019, local collector leg. [handwritten label] (DUBC); 1 male: Gutallac, Zamboanga del Norte, Mindanao / August 2018, male / [printed label] (TTC). Both paratypes with additional red, printed and handwritten label: PARATYPE: / *Doliops legalovi* sp. n. / A.Barševskis det. 2019 [handwritten red label].

Distribution. Philippines: Mindanao Island.

Description. Body black, with metallic luster. Elytra with six small spots of greenish scales. Body length: 11.9–12.2 mm, largest width: 4.9–5.4 mm.

Head almost square, parallel-sided, with large, but not extended bilobate eyes. Anterior portion of head between eyes and antennal bases with impressed longitudinal band of greenish pink scales, and thin, straight median line. Frontal part of head behind of clypeus convex, metallic glossy, with impressed longitudinal line, delicate punctation and pubescence. Frontal portion of head near clypeus with some coarse, sparse punctures. Longitudinal band of greenish scales starts from base of head, extending to anterior margin of eyes. Cheeks under eyes metallic glossy, without rudimental spots. Mandibles black, massive, very sharp. Labrum convex, metallic glossy, with distinctly concaved apical margin, with pubescence, small punctures, and covered with setae. Clypeus short, shiny, transverse, covered with setae. Surface of head with very fine punctation and fine, sparse tomentum. Basal area of antennae weakly protruding. Antennae long and slender; antennomeres 1 and 2 with strong metallic luster and very fine pubescence; antennomere 3

black, with short pubescence and a brush of inner preapical setae; following antennomeres with some long setae, except four apical segments; antennomeres 4 and 5 testaceous basally and darkened apically, with very fine pubescence in basal portion; remaining segments testaceous, with pubescence.

Pronotum very convex, subcylindrical, wider than long; anterior border markedly prominent, posterior border double, sinuous; pronotal disc hemispheric; metallic golden-colored, shiny, with very fine punctation, distinctly sparser and coarser in latero-apical portions. Lateral margins of pronotum with band of greenish scales, posterior or anterior portions of pronotum without spots.

Scutellum widely rounded apically, shiny and tomentose, black. *Pars stridens* visible (holotype), covered with very fine transverse microsculpture.

Elytra very convex, black, with metallic luster and with six rounded, oval or triangular spots of greenish scales. First dorsal spot of each elytron located closer to base of elytra, second dorsal spot more transverse, situated closer to the first spot than to the third, and visible away from suture, but third (preapical) spot - triangular. Two lateral spots irregularly rounded. Width of elytra at shoulders: 4.9–5.4 mm. Largest width of elytra behind middle: 4.1–4.4 mm. Elytra with very fine pubescence, microsculpture and very fine, sparse punctures, sparser and coarser in anterior portion. Meso-, metaepimera and sternites spotted laterally, covered with greenish scales. Legs relatively short and robust. Femora strongly widened at apical third, shiny, with golden metallic luster, without small spot at apex, more or less pubescent. Tibia flattened at external border, with fringe of dark setae. Dorsal surface of tarsomeres covered by pale pubescence. First tarsomere with metallic luster. Apical portions of tibia and tarsi covered by row of numerous yellow setae.

Differential diagnosis. Based on the general shape of the body, the new species is similar to *D. curculionoides* Waterhouse, 1842 (Fig. 6), but differs from this species by the following charac-



Fig. 3. *Doliops racsi* sp. n.: A – holotype (dorsal view), B – paratype (lateral view), C - holotype (lateral view)



Fig. 4. *Doliops metallica* Breuning, 1938

ters: 1) postero-lateral portions of the dorsal disc of the pronotum without small rounded spot, only with band of greenish scales at lateral edge, while that in *D. curculionoides* with small rounded spot, and wide oval or rounded spot at lateral edge; 2) elytra more convex, each elytron with six small oval, rounded or triangular spots, while that in *D. curculionoides* more flattened, with seven larger, rounded or oval spots.

Etymology. Patronymic, the new species is named after well-known Russian coleopterologist Andrei A. Legalov (Novosibirsk) in a honor of his valuable contributions to the study of Curculionoidea.



Fig. 5. Holotype of *Doliops legalovi* sp. n.



Fig. 6. *Doliops curculionoides* Waterhouse, 1842

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