

Three New Species of the *Holotrichia constricta*
Group (Scarabaeidae, Melolonthinae,
Melolonthini) from the Philippines

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Abstract Three new species belonging to the *Holotrichia constricta* group of scarabaeid beetles are described from the Philippines under the names *H. canlaonensis* sp. nov., *H. succedanea* sp. nov. and *H. dannymohagani* sp. nov.

Up to date, about thirty species belonging to the *Holotrichia constricta* group of scarabaeid beetles have been known from the Sunda Archipelago and the Philippines. Of these, only one species occurs on Borneo Island, and some other species are known from Java, the Lesser Sunda and Sulawesi. In contrast, more than twenty species occur in the Philippines. I am now mainly investigating the Philippine species of this group based on rather a large number of materials provided by various colleagues and a native collector. At this time, I was able to find three undescribed species among the material and would like to describe them.

Before going further, I would like to express my cordial thanks to the Philippine native collector, Mr. Danny D. MOHAGAN for offering many invaluable materials in this study.

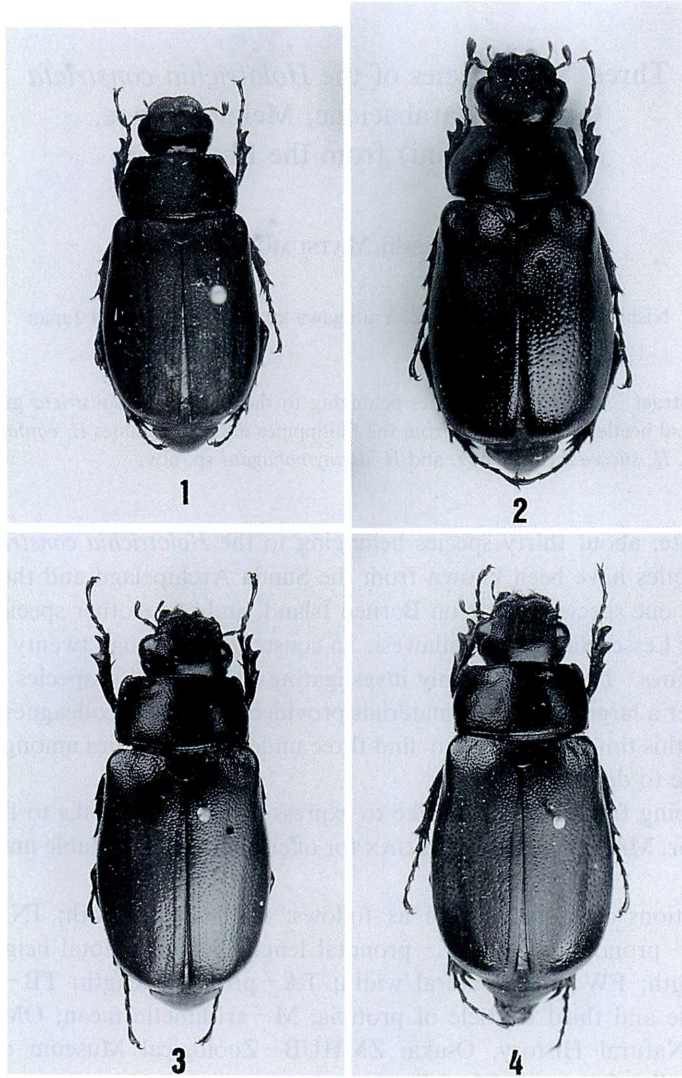
Abbreviations used herein are as follows: HW – head width; IN – interocular distance; PW – pronotal width; PL – pronotal length; PH – pronotal height; FL – metafemoral length; FW – metafemoral width; TA – protibial length; TB – distance between the base and third denticle of protibia; M – arithmetic mean; OMNH – Osaka Museum of Natural History, Osaka; ZMHUB – Zoological Museum of Humboldt University, Berlin; CA – author's collection.

Holotrichia canlaonensis MATSUMOTO, sp. nov.

(Figs. 1, 5, 8)

Description. Length: 14.2–19.2 mm.

Male. Body small-sized, generally blackish in color. Head, pronotum and scutellum almost blackish, mouth parts, elytra, pro- to metasterna, metacoxae and tibiae dark brown, femora brighter brown, abdomen and pygidium yellowish brown. Dorsal surface opaque, ventral surface generally opaque except in some portions.



Figs. 1-4. Habitus. — 1, *Holotrichia canlaonensis*, ♂; 2, *H. succedanea*, ♂; 3, *H. dannymohagani*, ♂; 4, ditto, ♀.

Clypeus bilobed, slightly emarginate at the middle of anterior margin, feebly raised along fronto-clypeal suture; frons slightly rough, coarsely punctate; vertex obscurely ridged; occiput sparsely punctate just behind vertex, densely so from behind the portion beyond the level of posterior margin of eye; punctures distributed in a shape of arcuate belt; labrum with relatively distinct longitudinal ridge on each lobe; antennal club shorter than six preceding segments together.

Pronotum convex, smooth, moderately produced laterad and slightly compressed basad; anterior angle subrectangular, relatively sharp; posterior angle distinct, 135° in lateral view; lateral margin slightly sinuate in anterior half, gently curved past the middle and straight in posterior half; posterior margin rimmed throughout; disc smooth, coarsely and sparsely punctate, the surroundings of punctures hardly concave. Scutellum about 2.2 times as wide as long. Elytron smooth, with five costae, 4th and 5th costae often faint.

Prosternum with a narrow flattened postcoxal process. Metasternum shining in central lozenge-shaped portion, opaque in the remaining portion, covered with long hairs in almost all areas. Abdomen shining only in rather narrow central area, opaque in rather large area; 2nd sternite sparsely with short hairs in the lateral opaque portions, 3rd to 5th sternites hardly haired medially and with some long recumbent hairs mainly in both latero-basal portions, respectively.

Metacoxa rectangular and slightly bluntly angulate at the postero-lateral corner, gently curved along lateral margin; metafemur stout, coarsely and sparsely punctate, metafemoral hairs on surface at most 0.4 times as long as metafemoral width; meso- and metatibiae with some remarkable serrations on upper surfaces, average five on mesotibia and average seven on metatibia; metatibial apical spurs very sharp, longer one being longer than 1st metatarsal segment, which is about as long as the 2nd; metatarsus clearly shorter than metatibia; claws each strongly bent, with sharp vertical denticle near base; the denticle of outer claw of metatarsus feebly smaller than that of inner claw.

Male genitalia with parameres short, stout, swollen in the middle, greatly reduced in apico-ventral portions; each paramere sharply pointed downward at apex; temones each widely sclerotized in basal half, forming a feebly pointed sclerite between them at the middle; internal sac longer than paramere, furnished with very fine, short hairs near apex.

Female. Antennal club approximately as long as five preceding segments together. Scutellum about 2.2 times as wide as long. Metafemoral hairs on surface at most 0.43 times as long as metafemoral width; mesotibia with average five serrations, metatibia with average eight serrations, some of which are very sharp; metatibial apical spurs stouter, slender leaf-shaped; metatarsus clearly shorter than metatibia, at most 0.75 times as long as the latter. Coxite of female genitalia with thick frame, weakly and roundly produced toward both apices.

Arithmetic data. HW/PW ♂: 0.64–0.66 (M 0.65, n=5), ♀: 0.62–0.65 (M 0.63, n=5); IN/HW ♂: 0.66–0.69 (M 0.68, n=5), ♀: 0.68–0.71 (M 0.69, n=5); PH/PW ♂: 0.50–0.55 (M 0.53, n=5), ♀: 0.48–0.53 (M 0.51, n=5); PL/PW ♂: 0.56–0.58 (M 0.57, n=5), ♀: 0.54–0.57 (M 0.56, n=5); FW/FL ♂: 0.33–0.37 (M 0.35, n=5), ♀: 0.38–0.41 (M 0.40, n=5); TB/TA ♂: 0.47–0.51 (M 0.49, n=5), ♀: 0.45–0.47 (M 0.46, n=5).

Distribution. Negros Island (the Philippines).

Type series. Holotype: ♂, Mt. Canla-on, Negros Is., Philippines, XII-2005, D. MOHAGAN leg. (OMNH TI-222). Paratypes: 10 ♂♂, 7 ♀♀, the same data as for the holotype; 1 ♂, ditto, II-2006; 3 ♂♂, 2 ♀♀, ditto, I-2006; 1 ♂, ditto, IX-2005; 1 ♂, 1 ♀,

ditto, X-2006; 2 ♂♂, alt. 800 m, Mt. Canla-on, Negros Is., Philippines, X-1997, D. MOHAGAN leg.; 1 ♂, Mt. Canlandog, Negros Is., Philippines, 10~15-IX-1988. The holotype and one female paratype are deposited in OMNH. Two paratypes are preserved in ZMHUB and the other remaining paratypes are housed in CA.

Etymology. This species is named after the type locality, Mt. Canla-on, which is located in the northern region of Negros Island of the Philippines.

Holotrichia succedanea MATSUMOTO, sp. nov.

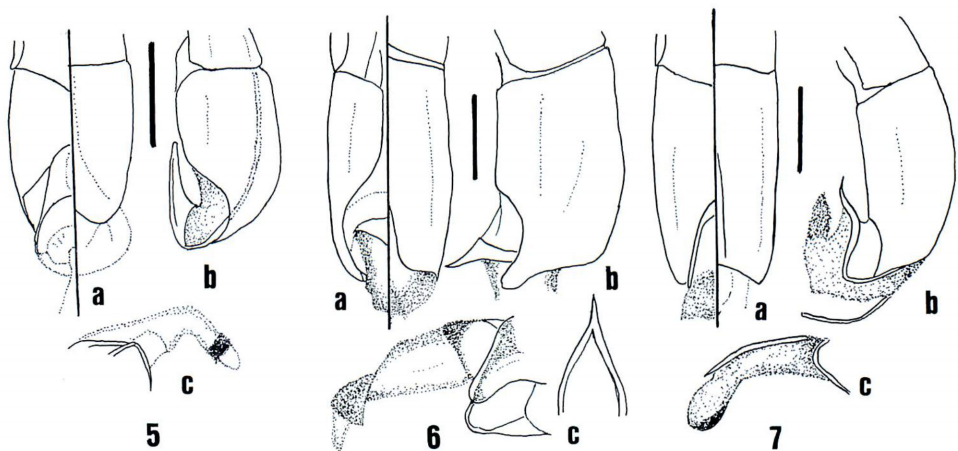
(Figs. 2, 7, 10)

Description. Length: 19.9–24.3 mm.

Male. Body elongate oval. Head blackish brown, antennae, mouth parts, pronotum, scutellum, pro- to mesosterna, tibiae and tarsi dark reddish brown, elytra, pygidium and femora lighter reddish brown, metasternum and metacoxae dark yellowish brown, and abdomen light yellowish brown. Dorsal surface generally shining, sometimes opaque in marginal and apico-marginal areas of elytra.

Clypeus quadrate, flattened, gently rounded at each antero-lateral corner, and feebly emarginate at the middle of anterior margin; frons distinctly concave in central area, coarsely and densely punctate; vertex distinctly ridged, punctate as well as frons; occiput densely and finely punctate, the punctures extending toward foramen slightly beyond or not beyond the level of posterior margin of eye; antennae with 3-segmented club as long as or shorter than six preceding segments together.

Pronotum convex, trapezoidal and narrowed anteriorly; anterior angle sharp and rectangular, slightly produced anteriorly; posterior angle very blunt, close to 150° in



Figs. 5–7. Male aedeagus [a, ventral (left half) and dorsal (right half) views; b, lateral view, scale for a and b: 1 mm; c, internal sac and temones]. — 5, *H. canlaonensis*; 6, *H. dannymohagani*; 7, *H. succedanea*.

lateral view; lateral margin sinuate in anterior half and straight in posterior half, and remarkably reflexed in the portion between anterior angle and apical 1/4; disc smooth, coarsely and moderately densely punctate, the surroundings of punctures feebly concave, usually with a minute impression near each lateral angle and a pair of very faint transverse impressions in anterior portion. Scutellum 2.1 times as wide as long. Elytra smooth; sutural costa distinct, 2nd to 5th ones vanished or faint. Pygidium feebly convex, with some short hairs in apical area; the punctures coarse and sparse in almost all area, denser in apical portion.

Prosternum with almost flattened postcoxal process. Metasternum shining in central lozenge-shaped portion and opaque in the remaining portion, and covered with long hairs in almost all areas. Abdomen shining in large central portion, opaque in latero-basal transverse portions of 3rd to 5th sternites; central principal area hardly or very sparsely haired, 2nd sternite densely with short hairs laterad, 3rd to 5th sternites with recumbent long hairs in both latero-basal portions, respectively, 5th sternite also with a few long hairs medially.

Metacoxa bearing rectangular postero-lateral corner, which is feebly or not produced posteriad; metafemur sparsely and finely punctate, metafemoral hairs on surface being at most 0.33 times as long as metafemoral width; meso- and metatibiae with some serrations on upper surfaces, average five serrations on mesotibia and average seven on metatibia; metatibial apical spurs slender leaf-shaped, with the longer spur longer than 1st metatarsal segment, which is about as long as the 2nd; claws each strongly bent, with a sharp vertical denticle; the denticle of outer claw of metatarsus smaller than that of inner claw.

Male genitalia with parameres obliquely truncate in lateral view; temones becoming a blunt triangular sclerite apically, with an arcuate 3rd branch producing from the base; internal sac with a relatively large area composed of reticulate structure medially.

Female. Dorsal surface opaque in almost all area of elytra, or except in central, large obtriangular area. Clypeus with weak and transverse elevation near base; antennal club shorter than or as long as five preceding segments together. Pronotum with a pair of very faint or slightly faint transverse impressions in anterior portion. Scutellum about 2.1 times as wide as long. Legs more robust; metafemur rather strongly swollen; metafemoral hairs on surface being 0.3 times as long as the metafemoral width; mesotibia with average five serrations on upper surface, metatibia with average eight, respectively; metatibial apical spurs slightly stout and leaf-shaped. Coxite of female genitalia quadrate, gently rounded at each antero-lateral corner.

Arithmetic data. HW/PW ♂: 0.66–0.68 (M 0.67, n=7), ♀: 0.63–0.66 (M 0.64, n=5); IN/HW ♂: 0.61–0.66 (M 0.63, n=7), ♀: 0.65–0.67 (M 0.66, n=5); PH/PW ♂: 0.47–0.54 (M 0.50, n=7), ♀: 0.50–0.55 (M 0.53, n=5); PL/PW ♂: 0.56–0.60 (M 0.57, n=7), ♀: 0.55–0.58 (M 0.57, n=5); FW/FL ♂: 0.35–0.39 (M 0.37, n=7), ♀: 0.40–0.43 (M 0.41, n=5); TB/TA ♂: 0.52–0.57 (M 0.54, n=7), ♀: 0.52–0.55 (M 0.53, n=5).

Distribution. Samar, Leyte, Mindanao, Siarguo Islands (the Philippines).

Type series. Holotype: ♂, Mt. Balocawihay, C. Leyte, Philippines, IV–2005

(OMNH TI-223). Paratypes: [Leyte] 2 ♂♂, 2 ♀♀, the same data as for the holotype; 1 ♂, 3 ♀♀, ditto, III-2005; 1 ♀, ditto, V-2005; 1 ♀, ditto, X-2004; 4 ♂♂, 2 ♀♀, ditto, V-2006; 5 ♂♂, 1 ♀, ditto, VI-2006; 9 ♂♂, 7 ♀♀, ditto, III-2007; 3 ♂♂, 1 ♀, Mahaplag, C. Leyte, III-2007. [Samar] 1 ♂, 1 ♀, Western Visoyer, E. Samar, V-2002. [Mindanao] 2 ♂♂, 1 ♀, Tandag, Surigao, NE Mindanao, IV-1985; 1 ♀, Mt. Malindang, NW. Mindanao, IX-2003. [Siarguo] 2 ♂♂, 1 ♀, Dapa, Siarguo Is., 17~18-III-1983, N. NISHIKAWA leg. The holotype and one paratype are deposited in OMNH. Two paratypes are preserved in ZMHUB and the other remaining paratypes are housed in CA.

Remarks. This species is closely allied to *H. mindanaona* BRENSKE, but can be distinguished from the latter by the 3rd arcuate branch producing from the base of temones of male genitalia. After diverged from the common ancestor of this species and *H. mindanaona*, this species is considered to have extended its distribution northwards along the eastern coast of the Philippines.

Etymology. This species is named to show the presence of a close systematic relationship with *Holotrichia mindanaona* BRENSKE.

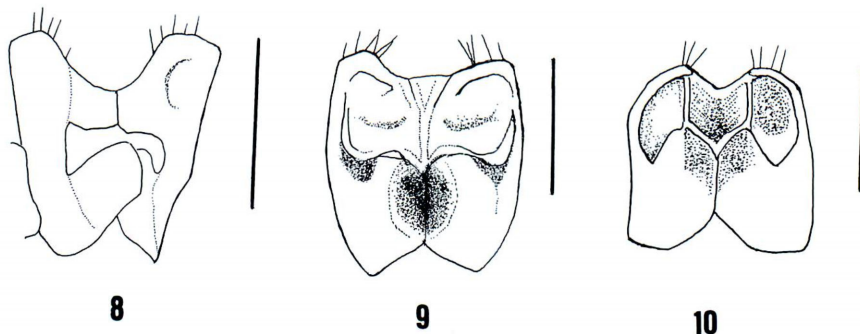
Holotrichia dannymohagani MATSUMOTO, sp. nov.

(Figs. 3, 4, 6, 9)

Description. Length: 20.4–25.7 mm.

Male. Head, pronotum and tibiae dark brown, the remaining portions brighter brown, base of elytra often thicker, femora with slightly reddish tinge. Dorsal surface shining; ventral surface opaque on metacoxa and almost all of meso- to metasterna, generally shining on prosternum and abdomen.

Clypeus clearly bilobed, rather deeply emarginate at the middle of anterior margin, weakly and transversely raised along fronto-clypeal suture; frons rough, distinctly concave in central area, coarsely punctate; vertex obscurely ridged; occiput densely and



Figs. 8–10. Coxite of female genitalia (scale: 1 mm). — 8, *H. canlaonensis*; 9, *H. dannymohagani*; 10, *H. succedanea*.

finely punctate, with punctures extending toward foramen beyond the level of posterior margin of eye; labrum with remarkable longitudinal ridge on each lobe; antennal club short, as long as five preceding segments together.

Pronotum convex, quadrate and hardly produced laterad; anterior angle roundly and gently produced anteriorly; posterior angle distinct, 135° in lateral view; lateral margin feebly sinuate in anterior half, straight in posterior half and laterally reflexed near anterior angle; posterior margin rimmed throughout; disc coarsely punctate, sometimes obscurely sulcate along median line, the surroundings of punctures hardly concave, with or without a minute impression near each lateral angle. Scutellum about 2.1 times as wide as long. Elytra smooth; sutural, 2nd and 3rd costae conspicuous, 4th and 5th vanished.

Prosternum with flattened postcoxal process. Metasternum shining and glabrous in central lozenge-shaped portion, opaque and densely with long hairs in the remaining portion. Abdomen shining in almost all area, opaque in each latero-basal transverse portion of 2nd to 5th sternites; central area almost glabrous, 2nd sternite sparsely with semi-long hairs in lateral portions, 3rd to 5th sternites bearing some longer hairs in above latero-basal transverse portions, respectively.

Metacoxa rectangular and sharp in postero-lateral corner, gently curved along lateral margin; metafemur stout, coarsely and sparsely punctate, metafemoral hairs on surface being at most 0.25 times as long as metafemoral width; meso- and metatibiae with some inconspicuous serrations on upper surfaces, average five serrations on both meso- and metatibiae; metatibial apical spurs slender and sharp, with longer one clearly longer than 1st metatarsal segment, which is as long as the 2nd; claws each strongly bent, with sharp vertical denticle near base; the denticle of outer claw of metatarsus feebly smaller than that of inner claw.

Male genitalia with parameres short and cylindrical, each paramere roundly and bluntly produced at apex in lateral view; temones each widely sclerotized in basal half, forming a feebly pointed sclerite between them at the middle, confluent at apex and forming an apically pointed apophysis; internal sac with a mass of sclerotized area near apex.

F e m a l e. Dorsal surface generally opaque except in small shining elliptical portions including elytral apical knobs. Antennal club approximately as long as five preceding segments together. Pronotum with or without a pair of very faint concavities near anterior margin. Scutellum about 2.0 times as wide as long. Legs more robust; metafemoral hairs on surface at most 0.25 times as long as metafemoral width; mesotibia with average five serrations on upper surface and metatibia with seven; metatibial apical spurs stouter, slender leaf-shaped; metatarsus clearly shorter than metatibia, about 0.75 times as long as the latter. Coxite of female genitalia quadrate, with upper frame moderately robust.

Arithmetic data. HW/PW ♂: 0.70–0.71 (M 0.71, n=4), ♀: 0.66–0.70 (M 0.68, n=4); IN/HW ♂: 0.63–0.65 (M 0.64, n=4), ♀: 0.64–0.66 (M 0.65, n=4); PH/PW ♂: 0.49–0.51 (M 0.50, n=4), ♀: 0.44–0.50 (M 0.48, n=4); PL/PW ♂: 0.55–0.56 (M 0.56,

n=4), ♀: 0.55–0.58 (M 0.57, n=4); FW/FL ♂: 0.36–0.39 (M 0.37, n=4), ♀: 0.42–0.45 (M 0.44, n=4); TB/TA ♂: 0.50–0.53 (M 0.52, n=4), ♀: 0.48–0.51 (M 0.49, n=3).

Distribution. Panay, Negros, Leyte, Mindanao Islands (the Philippines).

Type series. Holotype: ♂, Mt. Canla-on, Negros, alt. 800 m, X-1997, D. MOHAGAN leg. (OMNH TI-224). Paratypes: [Negros] 2 ♂♂, 2 ♀♀, the same data as for the holotype; 1 ♂, 1 ♀, ditto, 1-X-1990; 1 ♀, ditto, IX-1990; 1 ♂, ditto, 19-XI-1991; 1 ♀, ditto, 15-IX-2003; 2 ♂♂, Mambucal, alt. 300 m, Mt. Canla-on, 6-IX-1996; 1 ♂, 1 ♀, Mt. Mandalagan, N. Negros, IX-2005. [Leyte] 1 ♂, 1 ♀, S. Leyte, 13-IX-1989. [Mindanao] 1 ♂, Mt. Kitanglad, N. Mindanao, 12~30-IX-1991. [Panay] 1 ♂, Mt. Majaas, 24~30-VIII-1991. The holotype is deposited in OMNH. A paratype is given to ZMHUB and the other remaining paratypes are housed in CA.

Remarks. This new species is more closely allied to *H. stylifer* CHAPIN than to *H. mindanaona* BRENSKE and *H. succedanea* sp. nov. by having no 3rd branch of temones of male genitalia. This new species can also be distinguished from these three species by the clearly larger body.

Etymology. This species is named after Mr. Danny MOHAGAN, in honour of his sincere assistance in collecting these materials in the various areas of the Philippines.

要 約

松本 武: フィリピンからの *Holotrichia constricta* 群の3新種。—— 現在まで *Holotrichia constricta* 群の種は30種程度知られているが、そのうちフィリピン産のものは20種以上を占めている。筆者は、最近この群の中でもおもにフィリピンに産するものの解明を進めるため関連標本の集積を行ってきたが、今回、3種の新種を見出した。ここに *Holotrichia canlaonensis* sp. nov., *H. succedanea* sp. nov., *H. dannymohagani* sp. nov. の名で報告することとした。

References

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- CHAPIN, E. A., 1931. New species of melolonthine Scarabaeidae from the Philippine Islands. *J. Wash. Acad. Sci.*, **21**: 309–314.