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Two new species of *Deromecus* Solier from Guatemala (Coleoptera: Elateridae: Pomachiliini)

E.R. Fuller

457 Kinlin Road, Tweed, ON, K0K 3J0 Canada

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Two new species of *Deromecus* Solier from Guatemala (Coleoptera: Elateridae: Pomachiliini)

E.R. Fuller

457 Kinlin Road, Tweed, ON, K0K 3J0 Canada
fullerer@outlook.com

Abstract. *Deromecus georginas* Fuller, **new species**, and *Deromecus longitarsis* Fuller, **new species** (Coleoptera: Elateridae: Pomachiliini) are described from cloud forest habitat on eastern coastal volcanoes in Quetzaltenango Department, Guatemala, and compared with *Deromecus trivittatus* Champion from Mexico.

Key words. *Acanthathous*, *Agriotes*, *Athous*.

Resumen. Se describen la neuva especie *Deromecus georginas* Fuller y la neuva especie *Deromecus longitarsis* Fuller (Coleoptera: Elateridae: Pomachiliini), del hábitat del bosque nuboso, de los volcanes oriental de la costa, en el Departmento de Quetzaltenango, Guatemala, y se comparan con *Deromecus trivittatus* Champion, de México.

Palabras clave. *Acanthathous*, *Agriotes*, *Athous*.

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Introduction

The Elateridae are a conspicuous and diverse group of beetles in Central America (Champion 1894–1897). Adults of luminous species are called "cucuyo" (Perkins 1869), while larvae of click beetles are called "gusamos de alambre". The tribe Pomachiliini Candèze is most diverse in South America (Schenkling 1925; Blackwelder 1944; Arias-Bohart and Elgueta 2012). The Central American species of Pomachiliini were last treated by Champion (1894–1897), who recognized five genera and 10 species. Although traditionally regarded as Pomachiliini, I consider *Psiloniscus* Candèze, *Paranius* Champion and *Smiliceroides* Schwarz members of the Megapenthini (Fuller 1994). The Central American Pomachiliini thus comprise *Pomachilius* Eschscholtz, *Smilicerus* Candèze and *Deromecus* Solier. *Pomachilius* and *Smilicerus* have not been recorded north of Nicaragua, while *Deromecus* is known from one species, *Deromecus trivittatus* Champion, living in the state of Oaxaca, southern Mexico. To date, no species of Pomachiliini have been recorded from Guatemala. In my key to elaterid genera of Guatemala (Fuller 2012), *Deromecus* will key without difficulty to *Agriotes* Eschscholtz. *Deromecus* can be distinguished from *Agriotes* by the presence of an uninterrupted frontoclypeal carina between the eyes. In *Agriotes*, the frontoclypeal carina is reduced to a ventrally curved carina above each antennal socket. As part of my study of the elaterid diversity of Guatemala, I am describing two new species from northwestern Guatemala that are similar to *D. trivittatus*.

Materials and Methods

Genitalia were dissected and cleared using the methods of Becker (1956). After clearing, female genitalia were immersed in a solution of glycerine and ethanol, and the ethanol allowed to evaporate; this kept the bursa inflated for storage in glycerine. Dissected genitalia are stored in glycerine in microvials attached to the specimen. Illustrations were made from tracings of digital photographs. For photography, genitalia preparations were immersed in clear Purell® gel hand sanitizer (as per Otto 2012). Habitus photographs were compiled using AutoMontage Essentials by Syncroscopy®. Metathoracic wings were cut from the body at the base, studied on temporary glycerine slides and stored in glycerine with the genitalia. Label data are presented verbatim, with individual labels separated by a double backslash (//). Primary types are deposited in the Florida State Collection of Arthropods (FSCA), Gainesville, FL. Paratypes are deposited at La Universidad del Valle de Guatemala, Guatemala City

(UVGC), The Natural History Museum, London (NHML), and the author's collection (ERFC), as noted in the species accounts.

Terms. The periocular space as defined by Fuller and Platia (2006) is the cuticle between the antennal socket and the eye. The parantennal fovea of Quate and Thompson (1967) are here called the anterior tentorial pits. The anterolateral excavation of the mesosternum is called the anterior articulating surface after Guryeva (1974); it is described as 'ventral' if it occupies part of the ventral surface of the mesosternum. Wing venation is interpreted from Calder (1996, fig. 301).

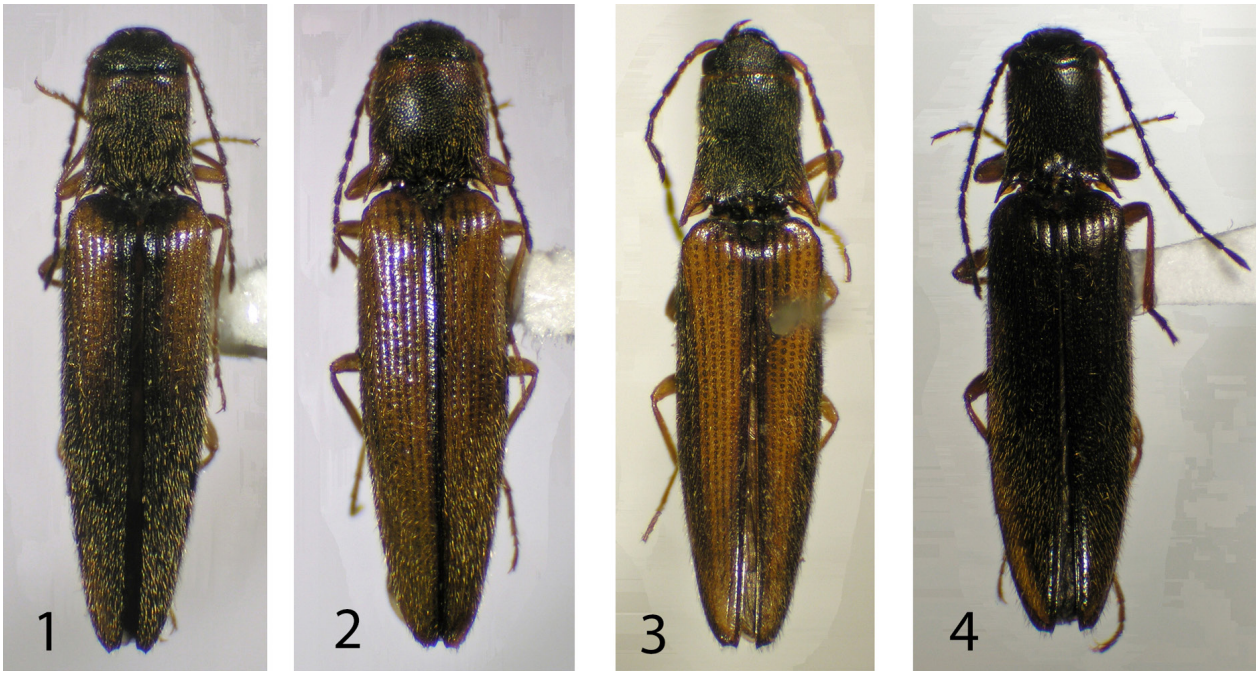
Deromecus georginas Fuller, new species

Figures 1, 2, 5, 8, 9

Type material. Holotype male, allotype female (both FSCA), three male and two female paratypes (ERFC, UVGC, NHML): GUAT. QUETZALTENANGO: 8 km e. Zunil, Fuentes Georginas, 2700m; 17.v.2017; E. Fuller// 14°45.025′N 91°28.834′W; beating: pine-cypress forest; 17-4A

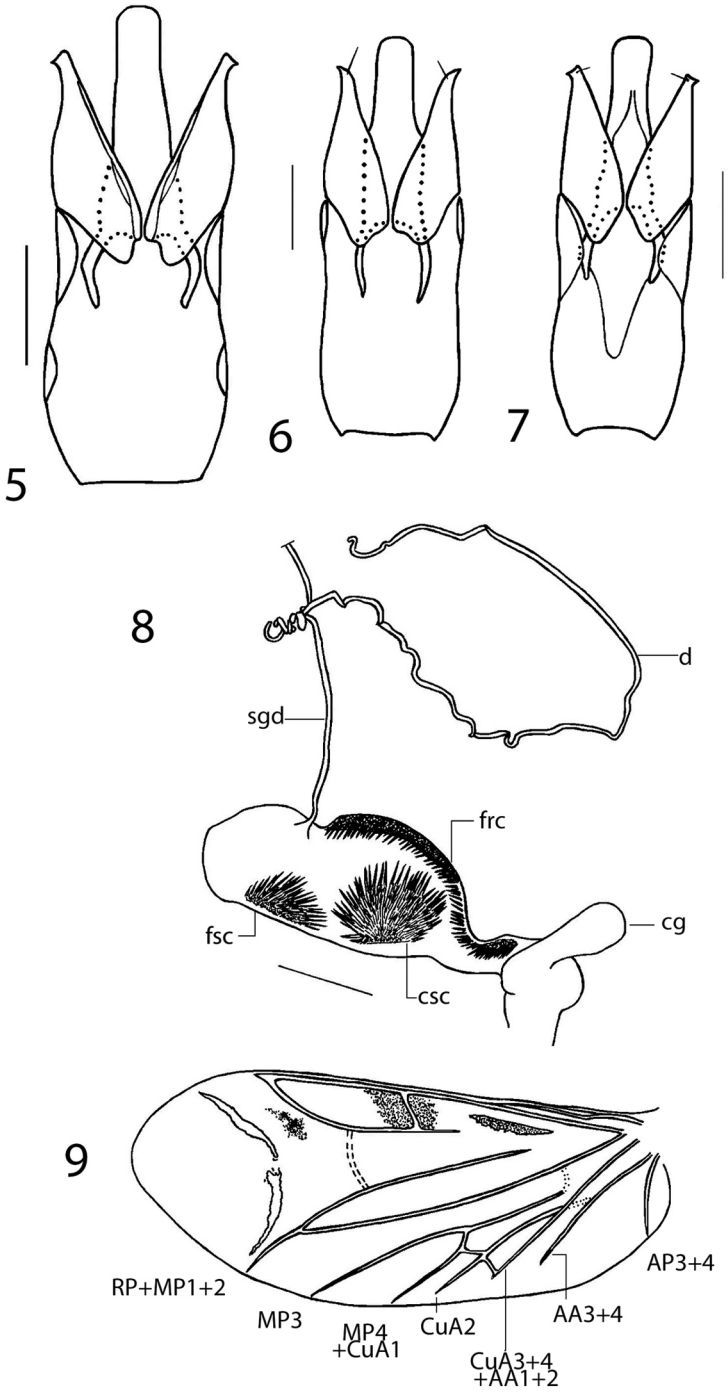
Diagnosis. *Deromecus georginas* differs externally from *D. trivittatus* Champion by the shorter pronotum and less robust hind angles of the pronotum (Fig. 1, 2). *Deromecus trivittatus* has the pronotum much longer than broad and the hind angles of the pronotum are more robust (Fig. 3).

Description. Holotype male (Fig. 1). Length 7.0 mm, width across humeri 1.5 mm. Head black; pronotum mostly black, anterior margin and hind angles yellowish-brown; elytra black with a yellowish brown vitta on intervals 3–7 from humerus to midlength of elytron, vitta grading to black posteriorly; most of venter of thorax black, posterolateral angle of hypomeron yellowish brown; abdomen grading from blackish brown on ventrite 1 to yellowish brown on ventrite 5; antennal scape yellowish brown, other articles dark brown; legs yellowish brown, pro- and mesocoxae darker; setae pale yellowish throughout. **Head.** Frons convex, slightly concave posterad frontoclypeal carina; frontoclypeal carina complete, evenly curved ventrally, separated from anterior margin by one puncture, connected to anterior margin by indistinct vertical carina; anterior tentorial pits elongate, oblique, slit-like; periocular space dorsoventrally grooved; frontal punctures small, dense, contiguous, umbilicate; setae about three puncture diameters long, hair-like, semierect, fine, directed more or less laterally. Eyes convex, slightly protuberant, not extending laterad pronotum. Gena projecting anterad ventral mandibular condyle. Mandibles asymmetrical, right mandible more deeply grooved for reception of left; subapical tooth present; lateral surface concave, bordered anteriorly by convex carina sharply limiting base of groove on both mandibles, carina projecting on right mandible; groove on right mandible uniform in depth; left mandible with anterodorsal surface of apical tooth with oblique carina from anterior margin to carina of lateral concavity. Antenna long, reaching midlength of metasternum; antennomeres 2 and 3 elongate-cylindrical, about two times longer than wide; antennomeres 4–11 flattened, about 2.5 times as long as wide, antennomeres 4–10 subrectangular, antennomere 11 elongate-oval, cuticle roughened, dull; secondary sexual setae absent. **Prothorax.** Pronotum in dorsal aspect midlength at midwidth as long as wide, lateral margins slightly concave, lateral carina not visible in anterior third; anterior curvature absent, anterolateral angles not projecting anteriorly; hind angles divergent, elongate, less than about 1⁄4 length of lateral margin, without carina, apex acute; basal sublateral incisures absent; punctures and setae as on head, except setae directed more or less posteriorly; in lateral aspect, pronotum flattened; lateral carina complete, directed anteroventrally, slightly sinuate in anterior third. Hypomeron subtriangular, surface slightly sinuate; punctures and setae as on pronotum except setae directed more or less away from procoxal cavity; mesal margin with curved band of shiny, finely and sparsely punctured cuticle and submarginal carina, band uniform in width throughout, slightly raised above adjacent cuticle and bordered laterally by shallow groove, excavated at anterior end, submarginal carina not elevated at excavation; submarginal carina and lateral pronotal carina meeting posterad anterior margin; posterolateral angle projecting, slightly longer than basal width. Prosternum convex, flattened along midlength, slightly longer than width at procoxae, tapered posteriorly; anterior lobe directed anteroventrally, anterior margin thin and punctate; punctures and setae as on pronotum; mucro abruptly constricted posterad procoxae, elongate, narrow, ventral surface slightly more than half length of dorsal surface, as wide as dorsal surface, punctate and setose; in lateral aspect, ventral apex projecting, acute, dorsal apex bluntly pointed, setose. **Pterothorax.** Scutellum flat, angled anteroventrally on same plane as adjacent elytra; shield-shaped; anterior margin darkly pigmented, directed anteroventrally, convex; lateral margins slightly sinuate;



Figures 1–4. Habitus, dorsal, *Deromecus* species. **1)** *D. georginas,* male. **2)** *D. georginas,* female. **3)** *D. trivittatus*, male. **4)** *D. longitarsis*, male.

posterior margin broadly rounded; punctures minute, dense, setae as on pronotum. Elytron 5.5 times as long as wide; wider at base than pronotum; lateral margins subparallel in basal half, gradually converging in apical half; apex excavate, oblique, with small sutural and lateral teeth on left elytron, only a lateral tooth on right elytron, lateral tooth at level of 5th stria; punctate, sutural punctures deeply striate, others shallowly striate, 3rd and 4th striae not reaching apex of elytron, strial punctures separated by slightly more than own diameters; intervals flat, minutely, sparsely punctured; setae as on pronotum; epipleuron subrectangular, abruptly widened at level of mesepimeron, gradually narrowing at level of metacoxa, dorsal margin projecting and carinate at posterolateral margin of elytron, punctures minute, separated by slightly more than own diameters adjacent to metepisternum, by about twice own diameters on anterior expansion, setae as on pronotum. Mesosternum concave; anterior articulating surface ventral; posterior margin raised and bluntly carinate; margins of mesosternal cavity raised and beaded anterad mesocoxa, ventral margin convex; in ventral aspect, margins of mesosternal cavity slightly convex, posterior margin transverse, width slightly less than width of adjacent mesocoxa, notched at midlength; inner posterior margin of cavity U-shaped; punctures small, very shallow, almost contiguous; setae as on pronotum. Mesepisternum flat, anterior margin projecting anteroventrally, margin smooth and shiny; sclerite with anterior circular pit and anterolateral elongate groove; posterior half of sclerite smooth and shiny; sclerite forming short anterolateral part of mesocoxal cavity; punctures and setae as on pronotum. Mesepimeron concave; mesepisternal-mesepimeral suture raised and carinate laterally; anterolateral projection slightly longer than basal width, bluntly pointed; punctures and setae as on pronotum, except setae directed posterolaterally. Metasternum convex, flattened along midlength; median sulcus reaching level of mesocoxal cavities; marginal ridge and submarginal groove along anterior and lateral margins but not reaching posterior margin; mesosternal-metasternal suture grooved; punctures small, shallow, almost contiguous throughout, slightly smaller along midlength, setae as on pronotum. Metepisternum elongate triangular, tapered posteriorly; anterior margin notched, posterior end bluntly pointed; punctures minute, dense; setae fine, directed posteriorly. Wing venation (Fig. 9); crossvein r4 reduced to a fold shown by a dashed line; crossvein m-m and cross connection between CuA_{3+4}+AA_{1+2} and AA_{3+4} unsclerotized but visible and shown by dotted lines; sclerotization of CuA_2, CuA_{3+4}+AA_{3+4} and AA_{3+4} reduced, these veins not reaching wing margin. **Legs.** Prothorax: Femur with anterior margin of tibial groove bearing band of short, stout, reddish, distally pointed spines. Tibia with two tibial spurs. Tarsi slightly shorter than tibia,



Figures 5–9. Genitalia and wing venation, *Deromecus* species. **5)** *D. georginas*, male genitalia, dorsal. **6)** *D. trivittatus*, male genitalia, dorsal (unpigmented apex of lateral lobes not shown). **7)** *D. longitarsis*, male genitalia, dorsal. **8)** *D. georginas*, female genitalia. **9)** *D. georginas*, male wing venation. Abbreviations. cg: colleterial gland; csc: circular spine cluster; d: diverticulum; frc: frond-shaped spine cluster; fsc: fan-shaped spine cluster; sgd: spermathecal gland duct. Scale bar = 0.25 mm.

tarsomere 1 subequal to tarsomere 5, tarsomeres 2, 3 and 4 shorter than previous tarsomere, ventrodistal lobes absent, pretarsal claws simple. Mesothorax: Trochantin visible, transverse, subrectangular. Femur without short spines by tibial groove. Tarsus with tarsomere 1 longer than tarsomere 5, slightly longer than tarsomeres 2+3, tarsomere 5 subequal in length to tarsomeres 2+3. Otherwise as on prothorax except longer. Metathorax: Metacoxal plate steeply narrowing at midwidth, narrow in lateral third, almost obliterated at lateral margin, posterior margin of mesal third transverse, convex, notched at base of trochanter, punctures and setae as on pronotum. Femur more flattened than on prothorax, slightly curved dorsally, stout spines absent. Tarsomere 1 subequal to tarsomeres 2+3, tarsomere 5 subequal to tarsomeres 3+4. Otherwise as on prothorax except longer. **Abdomen.** Ventrites 1–4 convex, transversely subrectangular, ventrite 4 less convex than ventrites 1 and 2, posterolateral angle slightly produced; anterolateral punctures on ventrite 1 as on metasternum, other punctures minute throughout, dense, setae as on metasternum; ventrite 5 subtriangular, about as long as basal width, posterior margin broadly rounded, punctures larger than on ventrite 4, almost contiguous throughout, setae as on ventrite 4 except setae along posterior margin shorter and stouter. Male genitalia (Fig. 5); basal piece slightly longer than lobes, posterior margin with narrow U-shaped notch in posterior ⅔; endothecal sclerite needle-like; apex of lateral lobes unpigmented.

Female (Fig. 2). Length 7.0 mm, width across humeri 1.75 mm. Characters as in male except: Anterior and lateral margins of pronotum and lateral margin of hypomeron reddish-brown; elytra yellowish-brown with sutural margin (1st interval) and anterior three quarters of 10th interval narrowly black. Anterior lobe and mucro of prosternum, and posteromesal patch on metasternum reddish brown. Lateral margins of pronotum in dorsal aspect slightly convex with small anterior curvature. Prosternum longitudinally sinuate, flattened along midlength, concave anteriorly; punctures smaller than pronotal punctures. Elytral apex excavate, transverse, with very small sutural and lateral teeth; strial punctures shallowly impressed, punctures almost contiguous; intervals densely punctate. Metasternum with median sulcus not visible in anterior third. Metathoracic wing with sclerotization of CuA_2, CuA_{3+4}+AA_{1+2} and AA_{3+4} reduced more than in male and distal cross connection closing wedge cell absent. *Female genitalia.* Apodemes of tergite 8 elongate, about 2.5 times as long as tergite 8, rod-like, distinctly divergent posteriorly, fused anteriorly. Ovipositor about as long as tergite 8, lightly sclerotized, sclerotizations reduced to lateral and posterior bar sclerites, posterior bar sclerite variably recurved and claw-like anteriorly; apical styli present, about three times as long as wide. Colleterial glands (Fig. 8, cg) ventral, elongate-globular, about as long as wide. Bursa copulatrix elongate, recurved laterally at base, recurved posteriorly at anterior end; spermathecal gland duct (Fig. 8, sgd) elongate, narrow, with a long narrow, coiled diverticulum near midlength (Fig. 8, d); bursa with a pair of circular, radiating cluster of long spines near midlength (Fig. 8, csc), a single fan-shaped cluster of long spines anteriorly (Fig. 8, fsc), and a frond-shaped band of long spines along basal two-thirds of bursa (Fig. 8, frc).

Variation. Paratypes vary from 6.0–7.0 mm in length.

Immature stages. Unknown.

Etymology. Named for the type locality; a noun standing in apposition.

Deromecus longitarsis Fuller, new species

Figures 4, 7

Type material. Holotype male (FSCA): GUAT. QUETZALTENANGO: 8 km e. Zunil, Fuentes Georginas, 2422m; 16–18.v.2017; E. Fuller// 14° 45.023′N 91° 28.834′W; lt./lt.trap; 17-3. Paratype male (ERFC): GUAT. QUETZALTENANGO: 8 km e. Zunil, Fuentes Georginas, 2700m; 17.v.2017; E. Fuller// 14°45.025′N 91°28.834′W; beating: pine-cypress forest; 17-4A.

Diagnosis. *Deromecus longitarsis* differs from *D. georginas* by larger size and shinier, less densely punctured pronotum. Specimens of *D. longitarsis* measured 8.0–8.5 mm in length, *vs.* 6.5–7.0 mm for *D. georginas*. Pronotal punctures are separated by 1–2 times their own diameters along midlength in *D. longitarsis* exposing smooth, shiny cuticle. In *D. georginas*, pronotal punctures are contiguous throughout.

Description. Holotype male (Fig. 4). Length 8.5 mm, width across humeri 2.0 mm. Head black, pronotum and elytra dark brown, ventral surface dark brown grading on abdomen to yellowish-brown on ventrite 5, antennal

scape yellowish brown, other articles dark brown; trochanter, femur and tibia yellowish brown, coxae and tarsi dark brown; setae yellow. **Head.** Frons convex, slightly flattened anterad eyes, frontoclypeal carina incomplete, separated by one puncture at midlength, curved ventrally, separated from anterior margin at midlength by two punctures; punctures small, umbilicate, almost contiguous, interspaces smooth and shiny; setae semierect, about three puncture diameters long, directed away from midpoint of frons; clypeus densely contiguously punctured; anterior tentorial pits elongate, oblique; periocular space shallowly grooved; gena projecting anterad ventral mandibular condyle, anterior apex acute. Eyes convex, not protruding laterad pronotum. Antenna long, extending to metacoxa; secondary sexual setae present on antennomeres 4–11; antennomeres 2 and 3 subequal in length, subglobular, flattened, slightly longer than distal width, punctures minute; antennomeres 4–10 narrowly subtriangular, slightly widened distally, about three times as long as distal width, antennomere 4 slightly longer than each of antennomeres 5–10, punctures minute, interspaces roughened, subshiny; antennomere 11 subelliptical, about three times as long as maximum width, apex bluntly pointed, somewhat constricted in apical third. Mandibles asymmetrical, left mandible overlying right, right mandible grooved for reception of left with low oblique carina at base of groove; lateral surface shallowly concave, ventral margin carinate, projecting. **Prothorax.** Pronotum, in dorsal aspect, with lateral margins parallel anterad hind angles, anterior curvature absent, anterolateral angles not projecting; hind angles divergent, relatively narrow, apex truncate, without dorsal carina, mesal and lateral margins carinate, dorsal surface flat; posterior margin without basal sublateral incisures; punctures umbilicate, about same size as frontal punctures laterally, slightly smaller along midlength, almost contiguous laterally, separated by own diameters along midlength, interspaces smooth and shiny; setae as on head except directed posteriorly; lateral carina not visible in anterior half of pronotum; pronotum in lateral aspect shallowly convex, gradually declivous from anterior margin; lateral carina complete, directed anteroventrally, slightly sinuate. Hypomeron: mesal margin broadly curved mesally with wide, minutely punctured and setose border and submarginal groove, anteromesal angle flat, neither excavated nor raised, mesal margin and lateral pronotal carina meeting anterior margin at same point; punctures about same size as lateral pronotal punctures anteriorly, grading to minute at level of procoxa, absent posterad procoxa except laterally; setae about same length as pronotal setae, appressed, directed away from procoxa; posterolateral angle projecting, slightly longer than basal width, apex truncate. Prosternum convex, flattened along midlength, flat between procoxae; anterior lobe directed anteroventrally, anterior margin evenly convex with narrow, smooth and shiny margin; punctures small, almost contiguous throughout; setae as on pronotum; mucro elongate; in lateral aspect, curved posterodorsally, ventral margin to ventral apex about ⅔ length of dorsal margin to apex; ventral margin with Y-shaped carina to apex of ventral tooth, arms of carina reaching level of posterior margin of procoxa, ventral tooth with apex acute; dorsal margin wider than ventral margin, apex broadly rounded, setose. **Pterothorax.** Scutellum flat; declivous at same angle as adjacent elytra; shield-shaped, lateral margins subparallel, posterior margin broadly convex, anterior margin shallowly convex, thickened, not raised; punctures minute, interspaces smooth and shiny; setae as on pronotum. Elytra elongate, 6.5 times as long as wide, wider at base than pronotum, anterior margin convex, lateral margins subparallel in anterior 2/3, apex broadly truncate with small posterolateral and sutural teeth, teeth smaller on left elytron; elytra slightly convex, broadly flattened, intervals flat; punctate, shallowly striate, 3rd and 4th striae not reaching apex of elytron, strial punctures about same size as pronotal punctures, unevenly separated by up to own diameters; intervals minutely punctured; setae as on pronotum. Mesosternum flat, declivous laterally with anterolateral marginal pit; anterior articulating surface ventral with anterolateral angle projecting, acute; margins of cavity raised and beaded; anterior margin at cavity notched, lateral angles of notch extended posterolaterally as a high carina to anterior end of cavity; in ventral aspect, margins of cavity subparallel, carinate, carina not meeting anterior oblique carina; posterior margin between mesocoxae truncate, about same width as ventral surface of mesocoxa, overhanging grooved mesosternal-metasternal suture; posterior margin of cavity U-shaped, without projections; punctures minute, shallow; setae as on pronotum. Mesepisternum shallowly concave with anteromesal and anterolateral pits; anterior margin raised and thickened, smooth and shiny laterally, transversely striate mesally; interspaces rugose in anterior half, posterior half with interspaces smooth and shiny, punctures minute and sparse; sclerite at most forming a very short part of margin of mesocoxal cavity. Mesepimeron shallowly concave; mesepimeral-mesepisternal suture raised, carinate; anterolateral projection about as long as basal width, apex bluntly pointed. Metasternum convex; median sulcus in posterior ¾, sulcus grooved in posterior half; marginal ridge and submarginal groove present only on lateral margin; punctures

minute, dense; setae as on prosternum. Metepisternum subrectangular, narrow, tapered posteriorly, anterior and posterior margins obliquely truncate; punctures and setae as on metasternum. **Legs.** Prothorax: Tibia with two tibial spurs. Tarsus: tarsomeres 1 and 5 subequal in length, tarsomeres 2–4 each slightly shorter than preceding tarsomere. Mesothorax: Trochantin visible, subrectangular, transverse. Otherwise as on prothorax except tibia and tarsus longer, and tibia with surface opposing femur with rows of stout spines. Metathorax: Metacoxal plate gradually narrowing in lateral half until almost absent laterally, posterior margin adjacent to femur-trochanter joint shallowly convex; punctures and setae as on pronotum. Femur longer than mesothoracic femur, at rest extends about ⅓ length laterad elytral margin. Tibia as on mesothorax except longer. Tarsus: tarsomere 1 longer than tarsomere 5, tarsomere 2 subequal in length to tarsomere 5, tarsomere 3 slightly shorter than tarsomere 2, tarsomere 4 about ⅔ length of tarsomere 3. **Abdomen.** Ventrites 1–4 shallowly convex, about three times as wide as long, punctures and setae as on pronotum; ventrite 5 subtriangular, slightly longer than wide, posterior margin broadly rounded and not recurved, punctures and setae in anterior half as on ventrite 4, grading to dense, almost contiguous, minute punctures and long setae in posterior half. Male genitalia (Fig. 7); basal piece about as long as lobes, posterior margin with V-shaped notch in posterior half; endothecal sclerite needle-like; median lobe with posteroventral elliptical carina.

Variation. The paratype measured 8.0 mm in length. The pronotal punctures are smaller than on the holotype and separated by 1–2 times own diameter along midlength.

Female. Unknown.

Immature stages. Unknown.

Etymology. From the Latin *longus* (long) and Greek *tarsos* (foot), in reference to the relatively elongate metatarsi.

Discussion

Male genitalia of *D. georginas*, *D. trivittatus* and *D. longitarsis* are shown in Fig. 5, 6, and 7, respectively. I have examined four males of *D. georginas*, two males of *D. longitarsis* and one male paratype of *D. trivittatus*; all three species are known from only one locality. The male genitalia show only subtle structural differences, and with small sample sizes, I am not treating male genitalia as diagnostic at this time.

Biology

Both new species were collected at the same time and same site. All specimens of *D. georginas* and the paratype of *D. longitarsis* were found along an open trail at 2700m leading to the viewpoint (El Mirador) on a ridge above the hot springs at Fuentes Georginas. Vegetation along this trail is dominated by pine (*Pinus* sp.), cypress (*Cupressus* sp.) and alder (*Alnus* sp.), with edges of steep slopes covered in a dense mixed shrub and herb layer. Presence of burnt stumps and charcoal indicated part of the trail had burned in the not-too-distant past (date unknown), and cypress had recently been replanted along the trail (*ca*. 2015). Specimens were beaten from lower branches of trees and trailside shrubs between 0700h and 1200h. *Acanthathous rugipennis* (Champion), *Acanthathous photinoides* (Champion), *Agriotes longipennis* Candèze, *Athous acuminatus* (Champion), and *Athous* near *nitidus* (Champion) were found at the same time. The holotype of *D. longitarsis* was attracted to a mercury vapour light set up at the guest cabins by the hot springs at 2400m. Both the viewpoint and cabins are within cloud forest habitat. Fuentes Georginas is within a previously recognized area of endemism in Guatemala: zone 4b of Schuster et al. (2000) and Schuster and Cano (2006), an area these authors refer to as the eastern coastal volcanoes. This area is also referred to as zone 3b, the central volcanic range (Monzón and Dix 2018, fig. 55).

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