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A taxonomic review, new species and a key to species of *Platycoelus* Blanchard, 1843 (Coleoptera: Carabidae: Pterostichini)

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Abstract

Based on the study of type material for species of *Platycoelus* Blanchard, 1843 significant changes to the current taxonomy of species included in this genus is required. *Pseggmatopterus politissimus* (White 1846) from New Zealand is found to be congeneric with *Platycoelus* species and so is a **new combination**. *Platycoelus irideomicans* (Tschitschérine 1890) **status novum**; *P. caledonicus* (Tschitschérine 1901) **status novum**; *P. sulcatulus* (MacLeay 1888) **status novum**; and *P. planipennis* (MacLeay 1871) **status novum**; each previously considered synonyms of *P. poeciloides* are each recognized as a distinct species. Five new species are described, four from Queensland, Australia: *P. chongheae* **sp. nov.**, type locality Iron Range National Park; *P. orion* **sp. nov.**, type locality Normanton; *P. brigalowphilus* **sp. nov.**, type locality Southwood National Park; and *P. politus* **sp. nov.**, type locality Cooloola National Park. The fifth species described is *P. hermes* **sp. nov.**, type locality Aitape, Papua New Guinea. These changes and additions bring the total number of species in the genus to 19. A key and habitus images for all species is provided as are illustrations of the male genitalia for species where male specimens were available.

Key words: Australian beetles, descriptions

Introduction

Carabid beetles of the genus *Platycoelus* Blanchard, 1843 are found in Australia, New Zealand, New Caledonia and New Guinea, but are only frequently collected in Australia. There, in season, and often tied to substantial periods of rain, they can be extremely common at lights, particularly the easily recognized, metallic green *P. mellie* Montrouzier, 1860. However, despite their commonness in Australian collections, the genus *Platycoelus* has not been treated taxonomically as a whole, leaving most specimens impossible to identify. The limits of the genus were broadly discussed by Darlington (1962) in his treatment of the New Guinea fauna. Therein he established most of the currently accepted generic synonymies. The New Caledonian species were covered by Will (2011), and subsets of the Australian species were listed, discussed or described in various publications (e.g. Moore, Weir, and Pyke 1987; Moore 1965; Sloane 1903). Britton (1940) noted that the monotypic New Zealand *Pseggmatopterus* Chaudoir, 1878 was very similar to species of *Platycoelus* and this fact was restated by Darlington (1962) and Moore (1965). However, no taxonomic action was taken and subsequent publications on the New Zealand fauna (e.g. Laroche and Larivière 2007) have maintained this as a distinct genus. Likewise, Sloane's species synonymies (1894; 1903) have been followed by subsequent catalogs without further study. Sloane (1894) was highly critical of Tschitschérine's (1891) treatment of Australian pterostichines and dismissed his new species as synonyms based on the very brief descriptions Tschitschérine published. Sloane's decisions for synonyms in *Platycoelus* were based on such descriptions and study of only some of the types, to which he only had occasional access to over several years. His study was not done using direct comparisons of the pertinent material. My recognition of many of the previously synonymized species as distinct is not due to significant differences in my idea of species from that of Sloane (i.e. lumper versus splitter), but rather it stems from me having access to all the types and additional specimens simultaneously, either as physical specimens or high-quality images, and by including male genitalia, a character system not used by Sloane. Since I have expanded on Sloane's study by the inclusion of additional

characters, I can present a clearer definition of the species boundaries and indicate where additional study is needed. The five distinct and previously unrecognized species described here were found during the study, all based on specimens from recent collecting efforts, illustrate the need for continued study and collection of specimen for this group.

Although this work is an advance in the understanding of the group, it is only a preliminary study. Several species are widespread and there remains ample material in collections that should be examined in the course of a full revision. For example the *P. irideomicans* complex is very likely to yield additional species once variation across its range is better understood.

Material and methods

Methods and terms follow Will (2011; 2015). Material examined is housed in the following collections and listed using these coden:

Australian Museum (AM), Sydney; Australian National Insect Collection (ANIC) CSIRO, Canberra; The Natural history Museum (BMNH), London; Essig Museum of Entomology (EMEC), Berkeley; California Academy of Sciences (CAS), San Francisco; Carnegie Museum of Natural History (CMNH), Pittsburgh; Hungarian Natural History Museum (HNHM), Budapest; Institut Royal des Sciences Naturelles de Belgique (IRSNB), Belgium; Martin Baehr collection (MBC), Munich, Germany; Museum of Comparative Zoology (MCZ), Harvard; Museum für Naturkunde (MFNB), Berlin; Muséum National d'Histoire Naturelle (MNHN), Paris; Museo Civico di Storia Naturale "Giacomo Doria" (MCSN), Genova; Museum Victoria (NMV), Melbourne; New Zealand Arthropod Collection (NZAC), Auckland; Queensland Museum (QM), Brisbane; R.M. Bohart Museum of Entomology (UCDC), Davis; University of Alberta Strickland Museum (UASM); Western Australian Museum (WAM), Welshpool.

Taxonomic treatment

Generic description

Platycoelus Blanchard, 1843

Type species *Platycoelus depressus* Blanchard 1853:25

= *Platycaelus* Blanchard, 1843; Plate 2 image 10. Emberson (1993) lists dates of publication of individual plates.

= *Platycoelus* Blanchard, 1853

= *Psegmatopterus* Chaudoir, 1878:4. New synonymy

= *Chlaenioidius* Chaudoir, 1865:110

= *Hypherpinus* Straneo, 1938:227

= *Dalbertisia* Straneo, 1939:117

Description. *Head.* Clypeo-ocular sulci not impressed, punctiform or more elongate, straight, very broadly and very shallowly impressed; mentum moderately or very shallowly emarginate, sides divergent, paramedial pits small or large, deeply or very deeply impressed; median tooth bifid or broadly emarginate; paraglossae small, without elongate setae at apex; ligular sclerite with two setae on apical margin; maxillary palpifer with one basal seta; antennae filiform, with three basal segments glabrous. *Thorax.* Pronotum quadrate or transverse, width across base slightly broader than or equal to apex, two marginal setae; pro-, meso- and metasterna glabrous; proepisternum with or without very scattered punctulae; elytra free along suture, border at base complete, interrupted or effaced, nine distinctly impressed complete striae or striae 1–7 not impressed on elytral disc, apicolateral plica visible, parascutellar stria long, distinctly impressed, connected or not connected to stria 1, angular base of stria 1 present, parascutellar punctures at base of stria 2, no discal punctures, intervals flat or slightly convex; flight wing full length or very short; anterior tarsi of male with three basal segments expanded, ventrally squamous. *Abdomen.* Ventrites 3–6 without sulci; aedeagus ostium dorsal, median lobe oriented left side up in repose; parameres attenuate with long narrow apex or broad and apically pointed, both nearly of equal length, left

wider than right; female reproductive tract (Fig. 9) with dorsolateral bursal lobe, elongate spermatheca broadly attached laterally at base of bursal lobe or spermatheca relatively narrow, very elongate and attached apically on dorsal lobe, with appended gland attached near base of spermatheca, spermatheca without digitiform diverticulum near base, without spermathecal gland duct diverticulum.

Differential diagnosis. The following combination of character states distinguishes members of the genus from other pterostichines in the Australian region: Antennae pubescent from antennomere 4; mental tooth entire; stipes with a single setae near base; elytra usually with eight more or less impressed striae; when impressed the parascutellar stria is present and intervals are of more or less equal width; abdominal ventrites without transverse sulci; and the length between hind margin of mesocoxa and anterior margin of metacoxa equal to or greater than diameter of mesocoxa. The male genitalia and female reproductive tract share similarities that may prove synapomorphic with *Delinius* Westwood, 1864, *Euryabax* Fauvel, 1903, and *Sphodrosomus* Perroud and Montrouzier, 1864.

Nomenclatural note. Bousquet (2002), overturned the spelling that was uniformly in use "*Platycoelus*," to "*Platycaelus*," based on what appears in the plate caption initially published by Blanchard (1843, see Emberson 1993). However, Bousquet's action was contrary to the 2000 Code (ICZN 1999), which states explicitly: "33.2.3.1. when an unjustified emendation is in prevailing usage and is attributed to the original author and date it is deemed to be a justified emendation." Therefore *Platycoelus*, as of the year 2000, was and remains the correct Code-compliant spelling as found in the catalogs by Lorenz (1998, 2005). Subsequent publications that used *Platycaelus* (Will & Kavanaugh 2012; Will 2011) following the spelling used by Bousquet (2002), are incorrect.

Descriptions of new species

Platycoelus brigalowphilus sp. nov.

Figs. 1C; 5A,B; 8.

Types. HOLOTYPE. Male. "Qld:27°50.2"Sx150°06.7"E, Southwood NP, camp., 8–11Dec2005, 12468, G.Monteith, S.Wright, mv light, 255m, sandy soil"/"QM Reg. No. T193533". Deposited QM.

Type locality. Queensland, Southwood National Park. Vicinity of 27° 50.2"S 150° 06.7"E.

Description. Dorsal habitus (Fig. 1C). *Size.* Overall length (sbl) 16.2mm; greatest width over elytra 6.8mm. *Color.* Dorsal and ventral surfaces black; legs, mouthparts, and antennae black. *Luster.* Dorsally and ventrally moderately shiny. *Iridescence.* Elytra with obvious spectral iridescence; pronotum slightly iridescent; ventral surface of body without iridescence. *Head.* Dorsal microsculpture with microlines not visible at 50x magnification. Frons punctulate, more densely and coarsely near base of head. Clypeal-ocular sulci represented by broad, shallow poorly defined impressions. Ocular ratio 1.62; eyes large, rounded. Labrum very slightly emarginate with the medial four setae broadly distributed, width from the outermost medial seta to the lateral seta subequal, slightly wider than width between medial setae. Mentum long, deeply emarginate prominent lateral lobes, with one pair small, round, deep pits; median tooth prominent, bifid; one pair of setae positioned laterad of median tooth. Gula narrow, width at middle about as wide width of mentum emargination, anterior tentorial pits small, punctiform. Antennae, overall length long, antennomeres 10–11 extended beyond pronotal base, antennomeres 5–11 elongate. *Thorax.* Pronotum slightly transverse, sides evenly and shallowly rounded from apex to base. Marginal bead continuous from apex to base; basal margin bordered; anterior angles scarcely produced; hind angles nearly right angled and rounded; inner basal impression well impressed, broad, linear; outer impression shallow, round impressions. Seta at hind angle touches basal bead and one pore width from lateral bead. Microsculpture of disc not visible at 50x magnification, very shallowly and sparsely punctulate, much denser near hind angles. Elytral striae complete, sharply impressed. Elytral microsculpture hardly visible at 50x, formed as transverse mesh of microlines. Intervals with dense micropunctulae throughout. Profemur in males and females unmodified. Metacoxal sulcus straight, extended to lateral end of coxa. Prosternal process at apex rounded and not margined. Sterna with micropunctulae throughout. *Abdomen.* Abdominal ventrites smooth. *Male genitalia.* Aedeagus (Fig. 5A,B) abruptly curved ventrally in apical quarter.

Etymology. The specific epithet derived from the Brigalow (*Acacia harpophylla*) forest at the type locality, is a Latinized noun, nominative case. This habitat type has largely been cleared and habitat loss may be a contributing factor in the apparent rarity of this beetle.

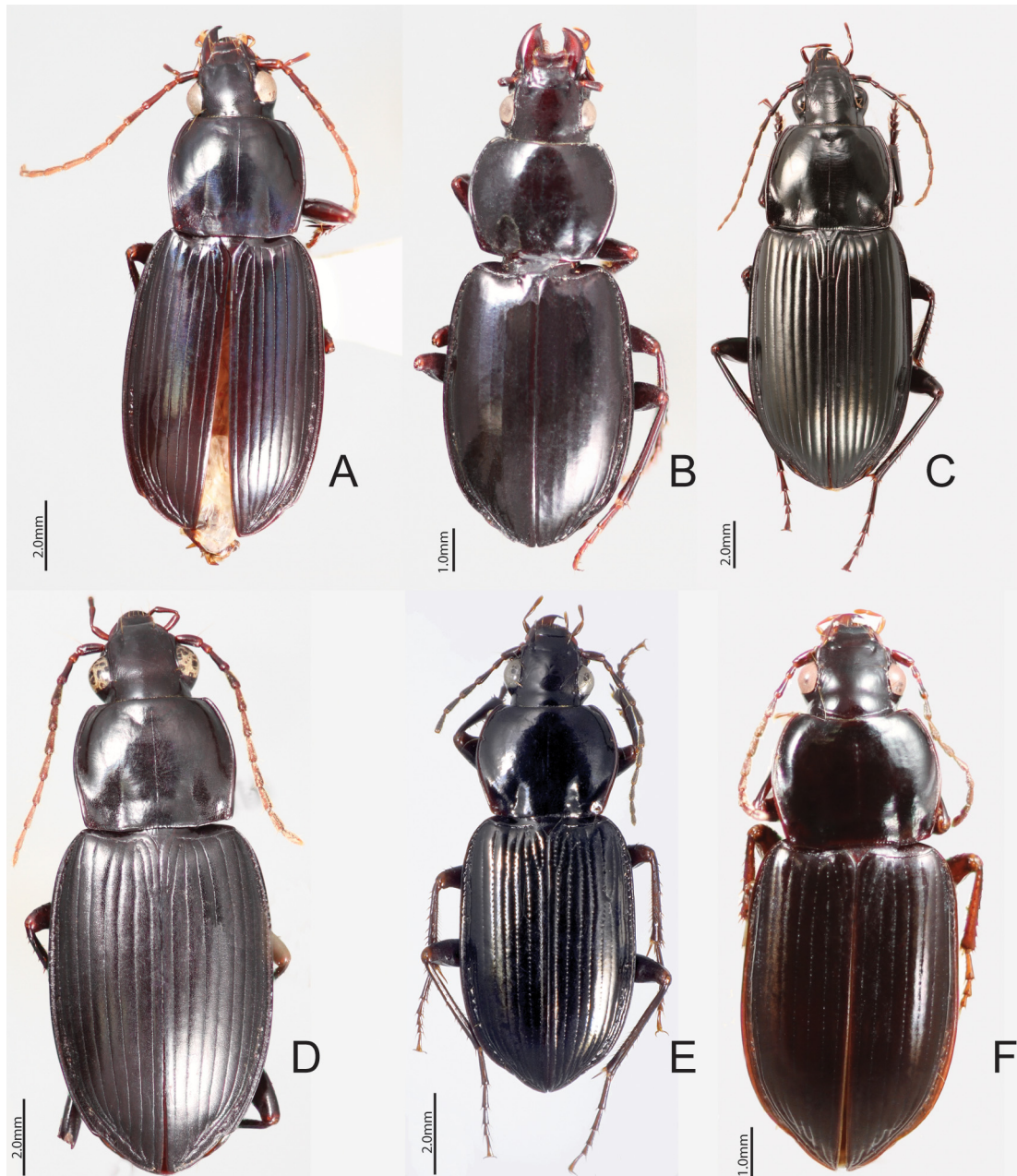


FIGURE 1. Dorsal habitus of A, *Platycoelus archboldi*; B, *P. bioroi*; C, *P. brigalowphilus* **sp. nov.**; D, *P. caledonicus*; E, *P. chongheeeae* **sp. nov.**; F, *P. depressus*.

***Platycoelus chongheeeae* sp. nov.**

Figs. 1E; 5E,F; 8; 10.

Types. HOLOTYPE. Male. "12°42'48.7"S/143°17'13.7"E, AUSTRALIA:Queensland, Iron Range National Park, Rainforest Camp at East Claudie R., headlamp search, 12m. 13.xii.2010, K.Will, AUS2010.xii.13.5". EMEC207235. Deposited QM.

Paratypes. Same date as holotype: Males, EMEC207234, EMEC207236, EMEC207240 (EMEC); females, EMEC207233, EMEC207237, EMEC207238, EMEC207239, EMEC207221 (EMEC). Same data as holotype on 12.xii.2010: Males, EMEC207215, EMEC207216, EMEC207217, EMEC207219, EMEC207223, EMEC207224, EMEC207226, EMEC207229 (EMEC). Females, EMEC207213, EMEC207214, EMEC207218 (QM); EMEC207220, EMEC207222 (ANIC), EMEC207225, EMEC207227, EMEC207228, EMEC207230,

EMEC207231, EMEC207232 (EMEC). Same data as holotype on 9.xii.2010: Female, EMEC207221 (EMEC). Iron Range, 103m, 12° 40' 35" S/ 143° 20' 13" E, 11.XI.2010, L. Hovorka. EMEC344347 (MBC). 12.44° S/ 143.14° E, 3km ENE of Mt. Tozer, 28 VI–4 VII 1986, T. Weir and A. Calder EMEC344348 (ANIC).

Type locality. Queensland, Iron Range National Park, vicinity of 12°42'50"S/143°17'14"E.

Description. Dorsal habitus (Fig. 1E). *Size.* Overall length (sbl) 9.6–13.5mm; greatest width over elytra 3.5–4.2mm. *Color.* Dorsal and ventral surfaces black. Legs, mouthparts, and antennae slightly paler piceous to rufopiceous. *Luster.* Dorsally and ventrally very shiny. *Iridescence.* Elytra and ventral surface of body with strong spectral iridescence. *Head.* Dorsal microsculpture with microlines very shallow, scarcely visible at 50x magnification; sculpticells isodiametric. Frons smooth, impunctate. Clypeal-ocular sulci represented by a punctiform impression near clypeus. Ocular ratio 1.30–1.70; eyes large size, rounded. Labrum slightly emarginate with the medial four setae narrowly distributed, width from outermost medial seta to lateral seta subequal to width across all four medial setae. Mentum short, shallowly emarginate, lateral lobes little produced, with one pair very large, round, very deep pits; median tooth short, very broad, shallowly emarginate; one pair of setae below median tooth. Gula moderately wide, width at middle about one half the width of mentum, anterior tentorial pits very large. Antennae, overall length long, antennomeres 10–11 extended to beyond base, antennomeres 5–11 elongate. *Thorax.* Pronotum slightly transverse, broadly and distinctly reflexed near hind angles, sides evenly rounded from apex to base or slightly sinuate from about one fifth of the pronotum length forward of base. Sinuation of lateral margins variable, but not markedly sinuate. Marginal bead continuous from apex to about one fifth pronotal length from base or nearly extended to base; basal margin not bordered; anterior angles scarcely produced; hind angles obtuse and rounded; inner basal impression absent or a shallow linear impression; outer impression absent. Seta at hind angle set about 4x pore widths forward of hind angles. Microsculpture of disc not visible at 50x magnification. Elytral striae complete or striae 5–7 shallow or not impressed in basal 2/3 and/or all striae shallow or scarcely impressed in apical half of disc; all striae well impressed and impunctate near apex and distinctly crenulate in basal third to half. Elytral microsculpture hardly visible at 50x, formed as transverse mesh of microlines. Profemur in males with deep, broad transverse sulcus (Fig. 10). Female profemur unmodified. Metacoxal sulcus straight, extended to lateral end of coxa. Prosternal process at apex rounded and not margined. Sterna smooth throughout. *Abdomen.* Abdominal ventrites smooth, glabrous. *Male genitalia.* Aedeagus (Fig. 5E,F) abruptly curved ventrally in apical quarter.

Etymology. The specific epithet is a Latinized noun in the genitive case from the name Chong Hee Will, my wife, whose generous support enabled the collection of the bulk of the type material, DNA quality material, and specimens of many other Australian carabids in addition to this new species.

Platycoelus hermes sp. nov.

Figs. 2A; 5I, J; 8.

Types. HOLOTYPE. Male. "Aitape Brit. N.G. Aug 1944 Darlington"//"~~det.~~Darlington at B.M. 1947–48"//"*full wing*"[handwritten with pencil on green paper]//"*Mes* ♂2"[handwritten with pencil on green paper]//"*Platycoelus depressus* Bl., det. Darlington '60"//"*MCZ-ENT 00011642*". Deposited MCZ.

Type locality. Papua New Guinea, Sandaun Province, Aitape. In the vicinity of 3°8'S 142°21'E.

Description. Dorsal habitus (Fig. 2A). *Size.* Overall length (sbl) 8.8mm, greatest width over elytra 3.2mm. *Color.* Dorsal and ventral surfaces black. Legs, mouthparts, and antennae piceous. *Luster.* Dorsally and ventrally shiny. *Iridescence.* Elytra and ventral surface of body with pronounced spectral iridescence. *Head.* Dorsal microsculpture not visible at 50x magnification. Frons with dense, irregularly placed and variously sized punctulae. Clypeal-ocular sulci represented by a broad, very shallow impression. Ocular ratio 1.53; eyes large size, rounded. Labrum very slightly emarginate with the medial four setae moderately widely distributed, width from the outermost medial seta to lateral seta one half width across all four medial setae. Mentum short, shallowly emarginate, lateral lobes little produced, with one pair very large, round, very deep pits; median tooth short, very broad, shallowly emarginate; one pair of setae below median tooth. Gula very wide, width at middle about two thirds the width of mentum, anterior tentorial pits small, deep. Antennae, damaged so overall length unknown, antennomeres 5–9 elongate. *Thorax.* Pronotum slightly transverse, sides very shallowly rounded from apex to just anterad base, then straightening and very slightly sinuate to base. Marginal bead continuous from apex to base;

basal margin not bordered; anterior angles not produced; hind angles obtusely angled, rounded; posterior impression not present, lateral area with a very broad, flat region to lateral margin; this region not or scarcely delimited medially, medially convex, not reflexed near hind angles. Seta at hind angle set at hind angles, touches lateral bead. Microsculpture of disc not visible at 50x magnification. Elytral striae complete, all striae very shallowly impressed and minutely crenulate, except near apex. Elytral microsculpture hardly visible at 50x, formed as an irregular or nearly isodiametric mesh of microlines. Intervals 1–7 with micropunctulae; 8–9 and across apex of elytron punctures denser and sculpturing more pronounced and irregular. Profemur in male and female unmodified. Metacoxal sulcus straight, extended to lateral end of coxa. Prosternal process at apex rounded and not margined. Sterna smooth throughout. *Abdomen*. Abdominal ventrites smooth, glabrous. *Male genitalia*. Aedeagus (Fig. 5I,J) sharply flexed ventrally at tip, which is bluntly rounded.

Etymology. The specific epithet is a Latinized noun, nominative case, based on the name of the messenger of the Greek pantheon, Hermes sp. nov., in allusion to his winged helm and boots and the fully developed flight wings characteristic of this species.

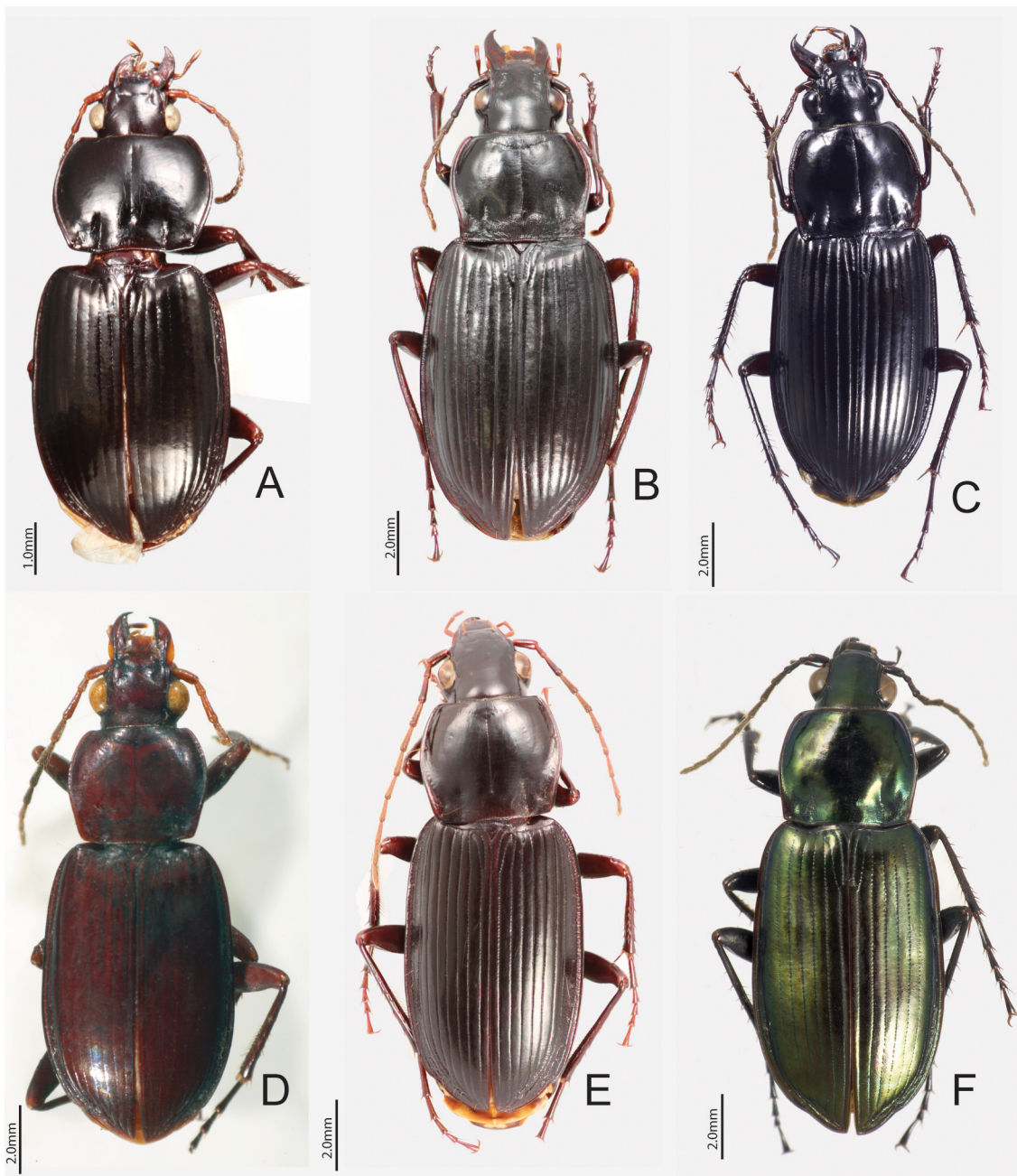


FIGURE 2. Dorsal habitus of A, *Platycoelus hermes* sp. nov.; B, *P. interstitialis*; C, *P. irideomicans*; D, *P. jedlickai*; E, *P. major*; F, *P. melliei*.

***Platycoelus orion* sp. nov.**

Figs. 3A; 6G,H; 8; 11A.

Types. HOLOTYPE. Male. "Kowanyama, N. Qld., 9.i.1977, D.L.Hancock"/"QM Reg. No. T193534". Deposited QM.

Paratype. Female. "17°39'31"S/141°05'15"E, AUSTRALIA:Queensland, Normanton @ Normanton R., UV light, 3m. 1.i.2008 K.Will". EMEC68095 (EMEC).

Type locality. Kowanyama, Queensland. Estimated coordinates:15° 28' 44" S 141° 15' 30" W.

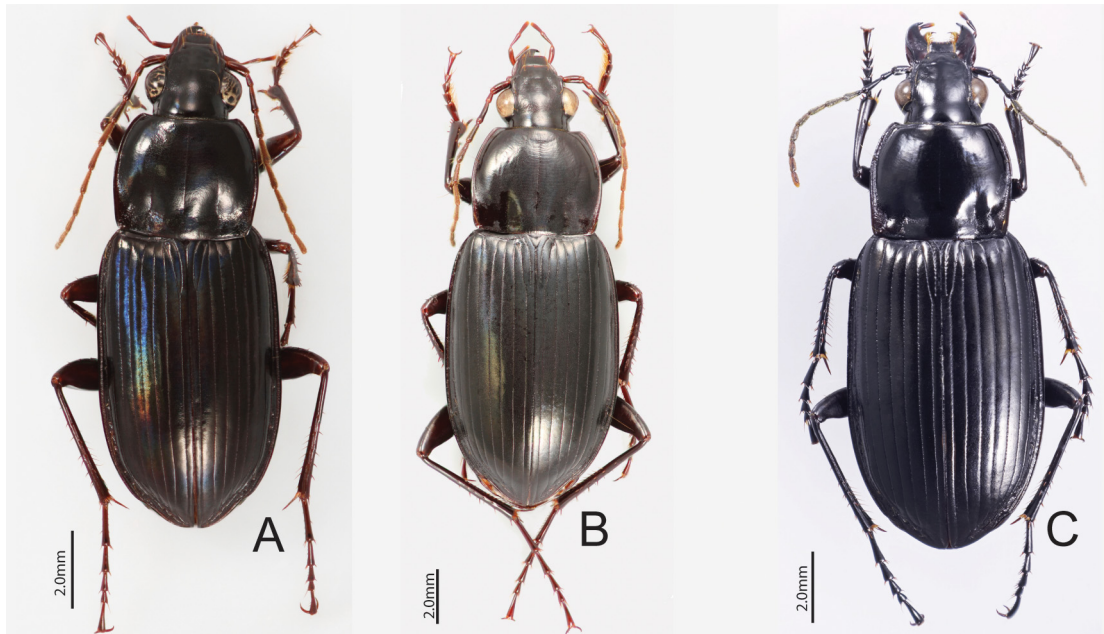


FIGURE 3. Dorsal habitus of A, *Platycoelus orion* sp. nov.; B, *P. planipennis*; C, *P. poeciloides*.

Description. Dorsal habitus (Fig. 3A). *Size.* Overall length (sbl) 12.8–15.5mm, greatest width over elytra 3.8–4.3mm. *Color.* Dorsal and ventral surfaces black. Legs, mouthparts, and antennae piceous. *Luster.* Dorsally and ventrally shiny. *Iridescence.* Elytra and ventral surface of body with pronounced spectral iridescence. *Head.* Dorsal microsculpture not visible at 50x magnification. Frons with dense, irregularly placed fine punctulae. Clypeal-ocular sulci linear, very shallowly and broadly impressed near clypeus. Ocular ratio 1.81–1.83, eyes large, prominent. Labrum truncate with setae equally distributed along width. Mentum long, deeply emarginate prominent lateral lobes, with one pair small, round, deep pits; median tooth prominent, broadly emarginate-bifid; one pair of setae positioned laterad of median tooth. Gula narrow, width at middle about as wide width of mentum emargination, anterior tentorial pits small, punctiform. Antennae, overall length long, antennomeres 9–11 reaching beyond pronotal base, antennomeres 5–11 elongate. *Thorax.* Pronotum transverse, sides evenly rounded from apex to base, without sinuation; base wider than width across anterior angles. Marginal bead wide, continuous from apex to base, basal margin bordered along lateral third, anterior angles not produced, hind angles rounded, slightly obtuse, inner basal impression shallowly impressed, broad, linear; outer impression shallow, elliptical impressions. Seta near hind angle in contact with or just apical of basal bead and one pore width from lateral bead. Microsculpture of disc not visible at 50x magnification. Elytral striae complete, sharply impressed. Elytral microsculpture hardly visible at 50x, formed as transverse mesh of microlines. Intervals with dense micropunctulae throughout. Profemur in males and females unmodified. Metacoxal sulcus straight, reaching lateral end of coxa. Prosternal process at apex rounded and not margined. Sterna with micropunctulae throughout. *Abdomen.* Abdominal ventrites punctate. *Male genitalia.* Aedeagus (Fig. 6G,H) abruptly curved ventrally in apical quarter.

Etymology. A Latinized noun in the nominative case from the name Orion Will, my son and my field assistant on the trip where the paratype male specimen of this species, and many other important carabid specimens, were collected.

***Platycoelus politus* sp. nov.**

Figs. 5b; 7C,D; 8.

Types. HOLOTYPE. Male. "Camp Milo" Cooloola, S.E.Q., E. Dahms, 3–13.iii.1970"/"/"Banksia dom. Open Forest, To Light"/"/"QM Reg. No. T193535". Deposited QM.

Paratypes: Queensland: Sky Window, Eungella National Park, 21°08'57"S 148°29'57"E, rainforest, 775m. 13.i.2008, K.Will AUS2008.i.13.1, EMEC344346, ♂EMEC. Illaweena St. Drewvale, 27° 38.6' S 153° 03.8' E, heath/scribbly gum, 40m, QM party, pitfall 51993, 31 Mar–29 Apr 2004, ♀T193537 and 30 Jan–1 Mar 2004, ♂T193538, QM. Boondall Wetlands, site 1, 27° 20.4' S 153° 04.5' E, *Melaleuca* woodland, 5–10m, QM party, pitfall 51938, 30 Jan–1 Mar 2004, ♂T193536 and pitfall 52000, Mar–29 Apr 2004, ♂T193541, QM. Passchendaele State Forest, Turkey Gully. 28° 31' S 151° 50' E. open forest, 840m, Burwell, Cook and Wright 9895, 21–23 Feb 2001, ♂T193539 and ♂T193540, QM. 5 km north of Mt. Bryden, 21° 21' S 148° 32' E, Eucalyptus woodland, 680m, J. Augusteyn 51632, pitfall, May 2003, ♂T193542, QM.

Type locality. Queensland, Camp Milo, Cooloola National Park. Estimated coordinates 25° 59' 45" S 153° 4' 14" E.

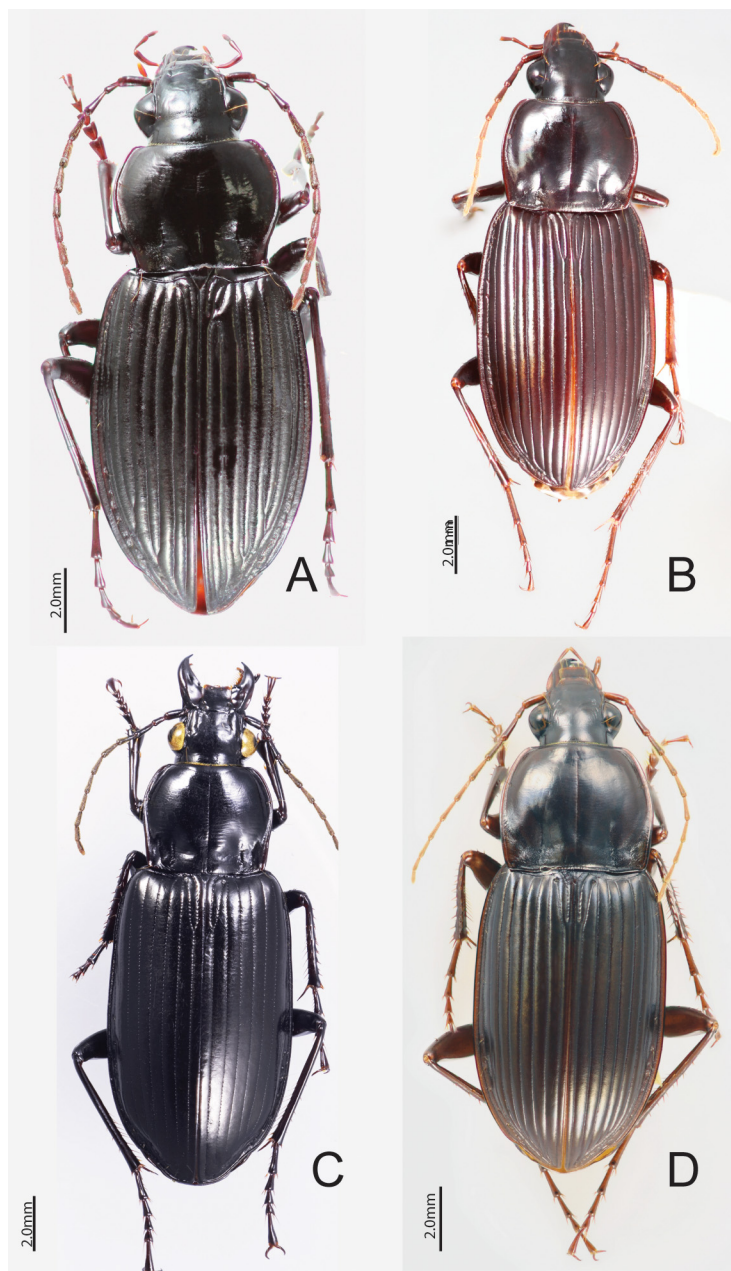


FIGURE 4. Dorsal habitus of A, *Platycoelus politissimus*; B, *P. politus*; C, *P. prolixus*; D, *P. sulcatulus*.

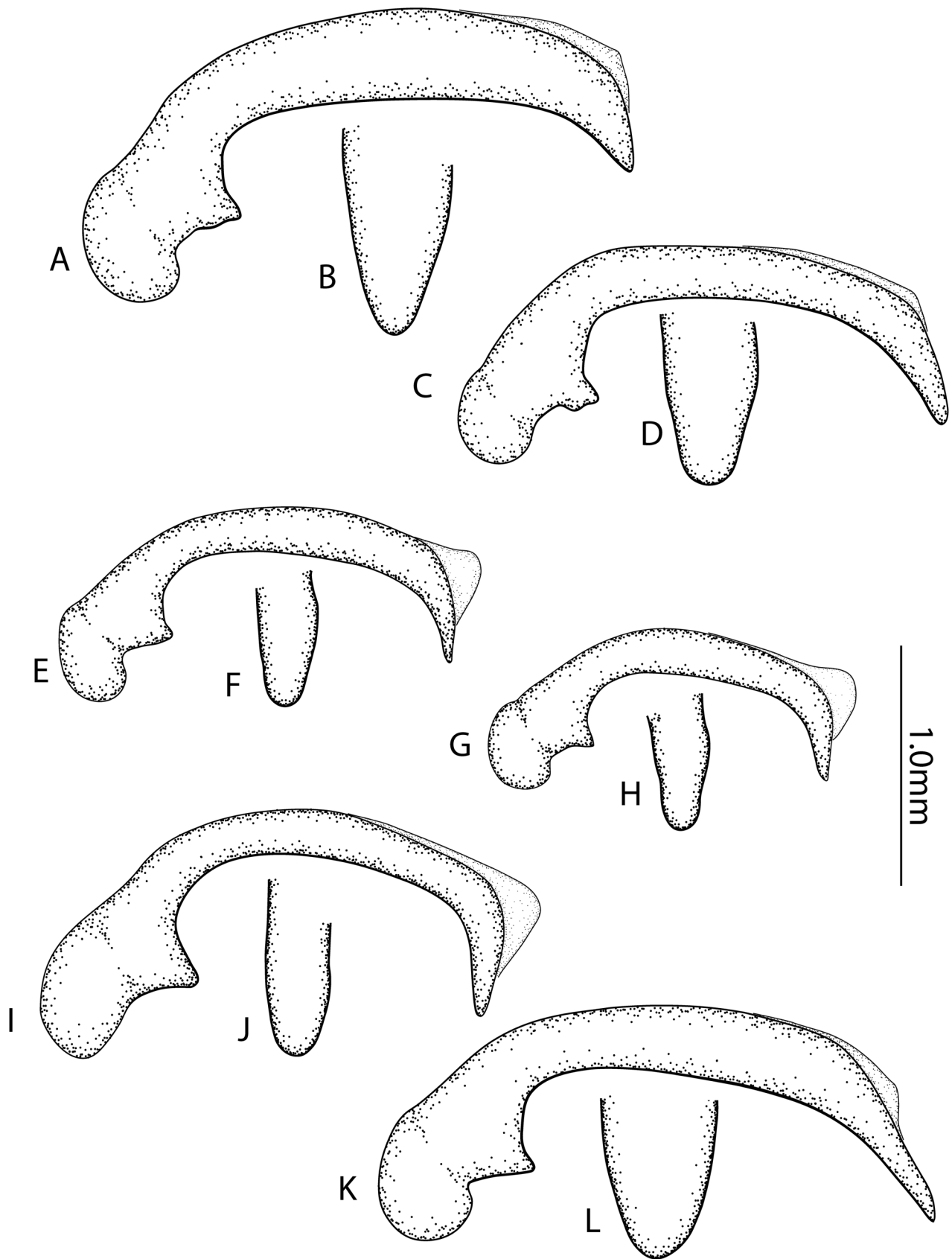


FIGURE 5. Male genitalia. A, left lateral, and B, ventral view median lobe tip of *Platycoelus brigalowphilus* **sp. nov.**; same view C–D, *P. caledonicus*; E–F, *P. chongheeeae* **sp. nov.**; G–H, *P. depressus*; I–J *P. hermes* **sp. nov.**; K–L *P. interstitialis*.

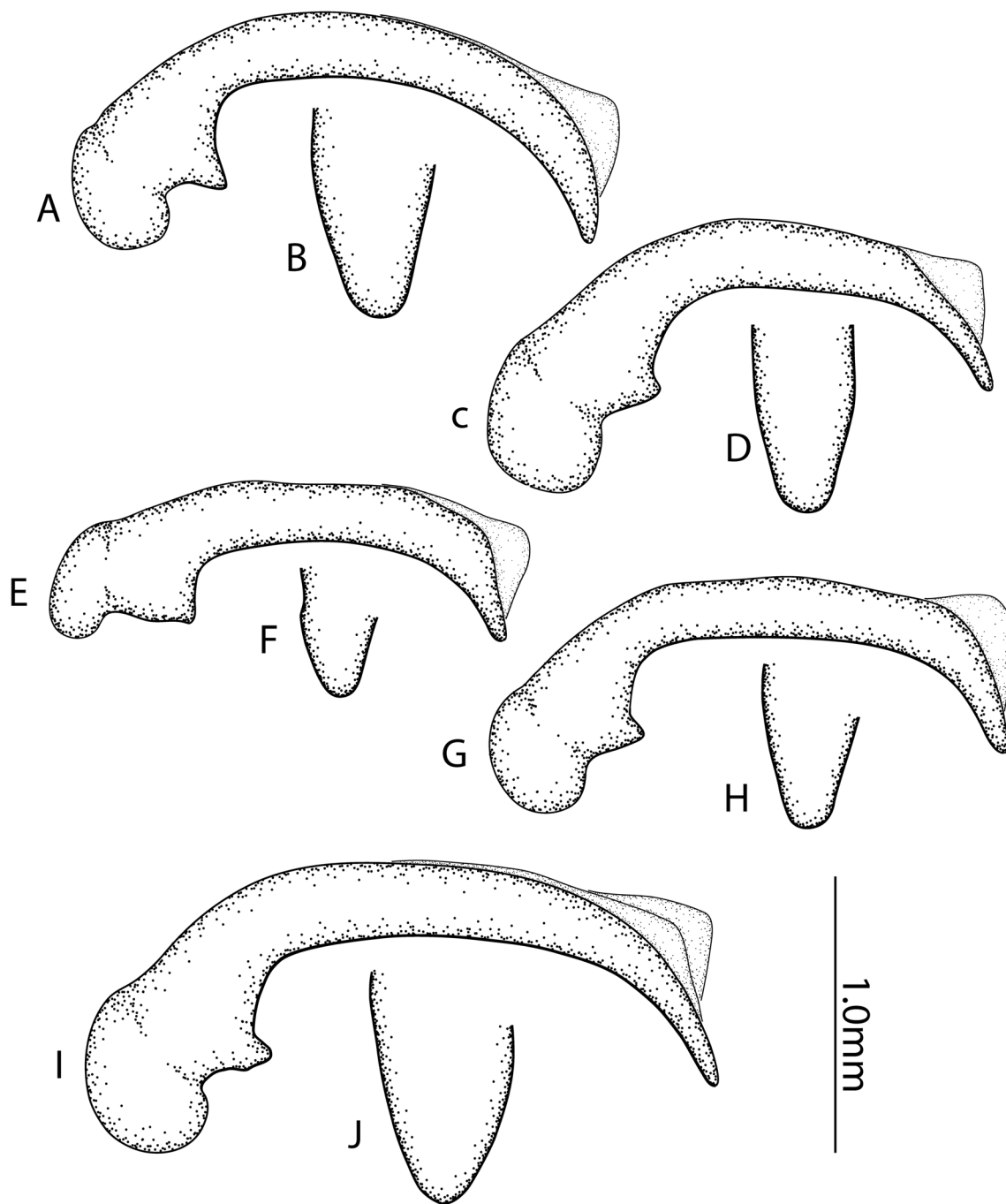


FIGURE 6. Male genitalia. A, left lateral, and B, ventral view median lobe tip of *Platycoccus irideomicans*; C–D, *P. major*; E–F, *P. melliei*; G–H *P. orion* sp. nov.; I–J, *P. planipennis*.

Description. Dorsal habitus (Fig. 4B). *Size.* Overall length (sbl) 13.2–15.7mm, greatest width over elytra 4.1–4.9mm. *Color.* Dorsal and ventral surfaces black or piceous. Legs, mouthparts, and antennae piceous. *Luster.* Dorsally and ventrally moderately shiny. *Iridescence.* Elytra with obvious spectral iridescence; pronotum without iridescence; ventral surface of body slightly iridescent. *Head.* Dorsal microsculpture with microlines not visible at 50x magnification. Frons minutely and sparsely punctulate, more densely near base of head. Clypeal-ocular sulci impressed, linear, parallel near clypeus and divergent on frons. Ocular ratio 1.64–1.75, eyes large, prominent. Labrum truncate with setae equally distributed along width. Mentum long, deeply emarginate prominent lateral lobes, with one pair small, round, deep pits; median tooth prominent, bifid; one pair of setae positioned laterad of median tooth. Gula narrow, width at middle about as wide width of mentum emargination, anterior tentorial pits small, punctiform. Antennae, overall length long, antennomeres 10–11 reaching beyond pronotal base, antennomeres 5–11 elongate. *Thorax.* Pronotum slightly transverse, nearly quadrate; sides evenly and very

shallowly rounded from apex to base, without sinuation; base wider than width across anterior angles. Marginal bead wide, continuous from apex to base; basal margin bordered, sometimes interrupted medially, anterior angles not produced, hind angles rounded, very slightly obtuse and nearly right angled, inner basal impression shallowly impressed, linear; outer impression very shallow, broad and not well defined onto the slightly reflexed basolateral region. Seta near hind angle in contact with or just apical of basal bead and two pore widths from lateral bead. Microsculpture of disc not visible at 50x magnification. Elytral striae complete, sharply impressed. Elytral microsculpture hardly visible at 50x, formed as transverse mesh of microlines. Profemur in males and females unmodified. Metacoxal sulcus straight, reaching lateral end of coxa. Prosternal process at apex rounded and not margined. Sterna smooth throughout or with very shallow micropunctulae laterally. *Abdomen*. Abdominal ventrites smooth. *Male genitalia*. Aedeagus (Fig. 7C,D) very slightly curved ventrally in apical quarter.

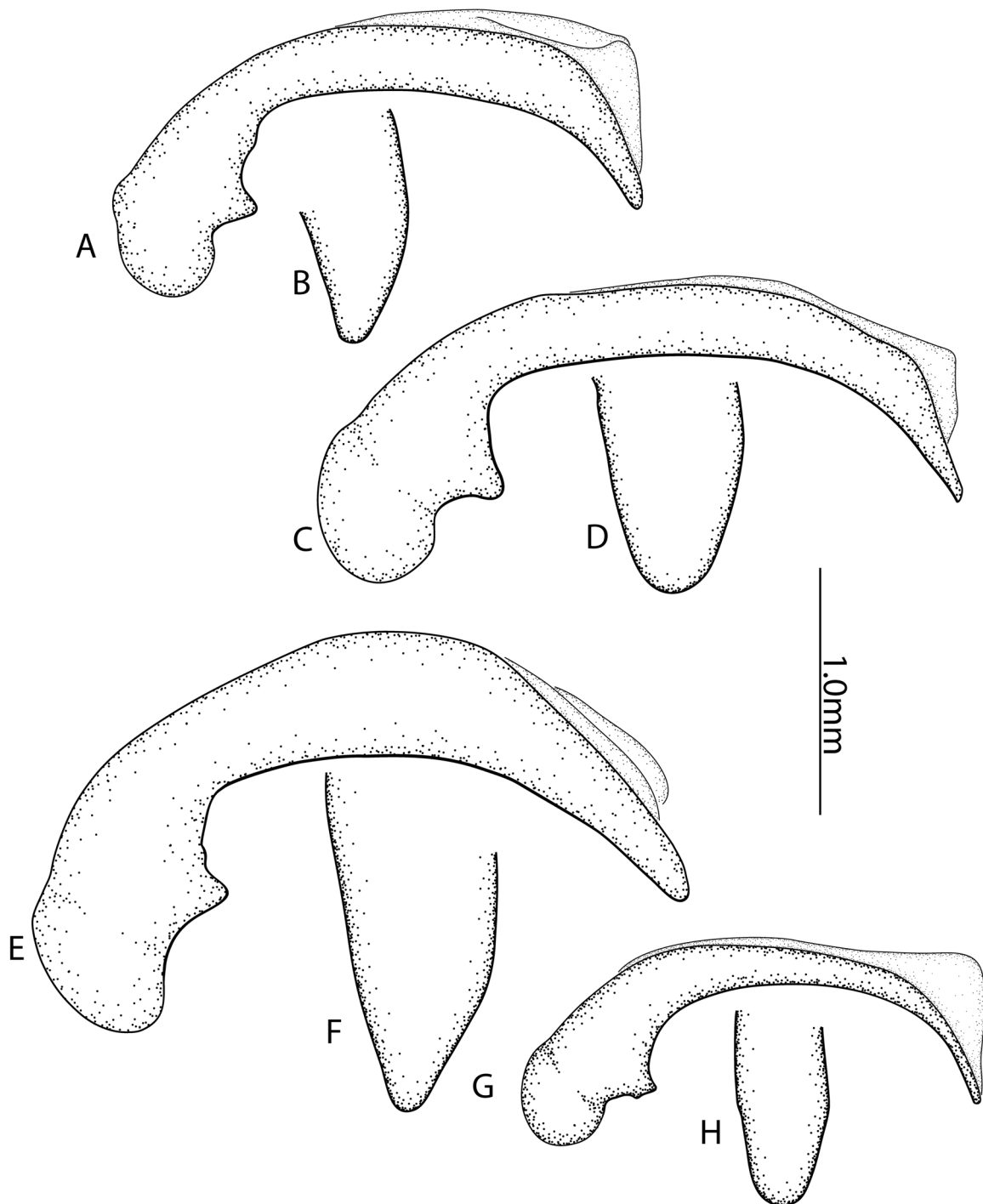


FIGURE 7. Male genitalia. A, left lateral, and B, ventral view median lobe tip of *Platycoelus poeciloides*; C–D, *P. politus*; E–F, *P. prolixus*; G–H, *P. sulcatulus*.

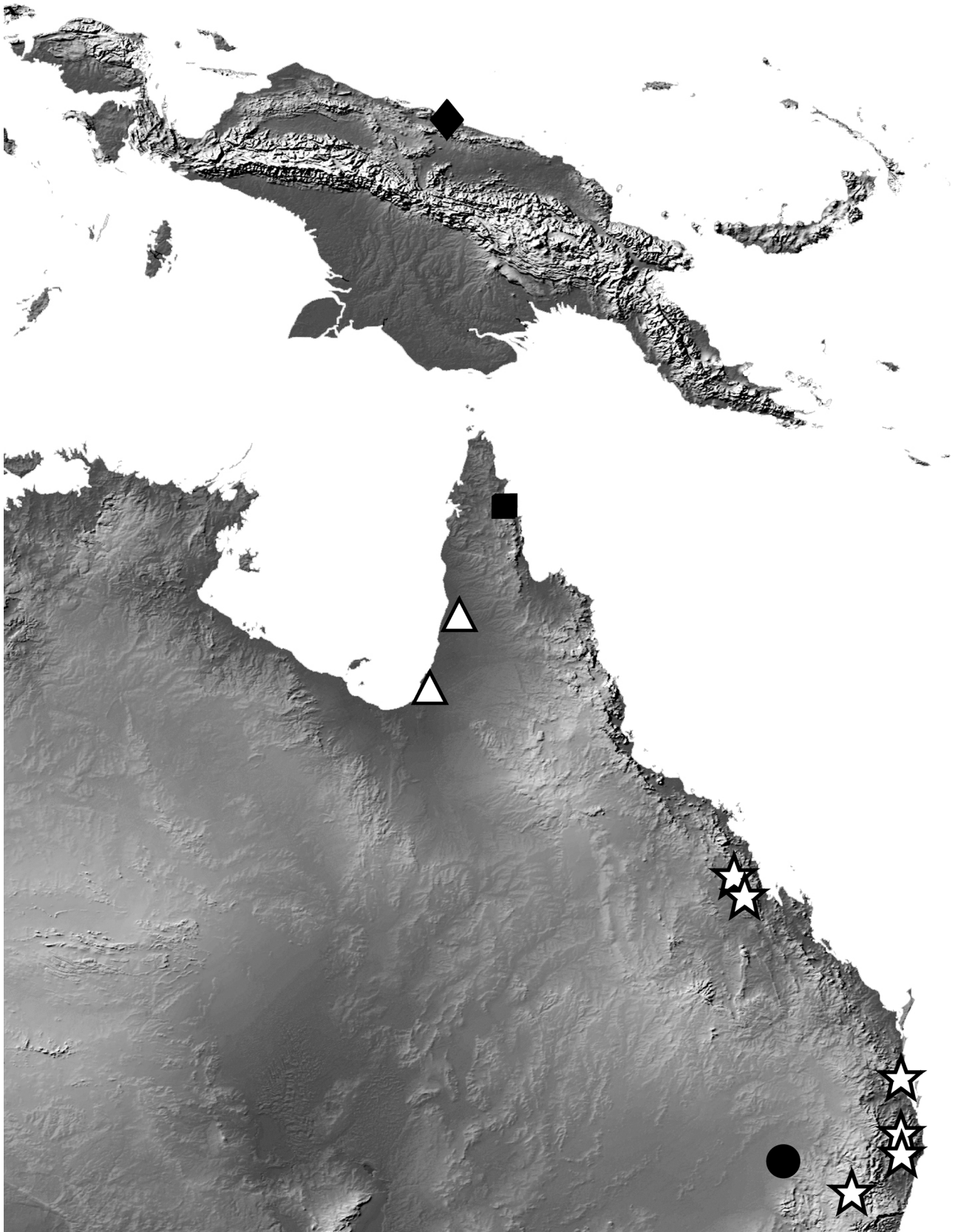


FIGURE 8. Specimen localities for new species of *Platycoelus*. Diamond, *P. hermes* sp. nov.; square, *P. chongheae* sp. nov.; triangle, *P. orion* sp. nov.; star, *P. politus*; circle, *P. brigalowphilus* sp. nov.

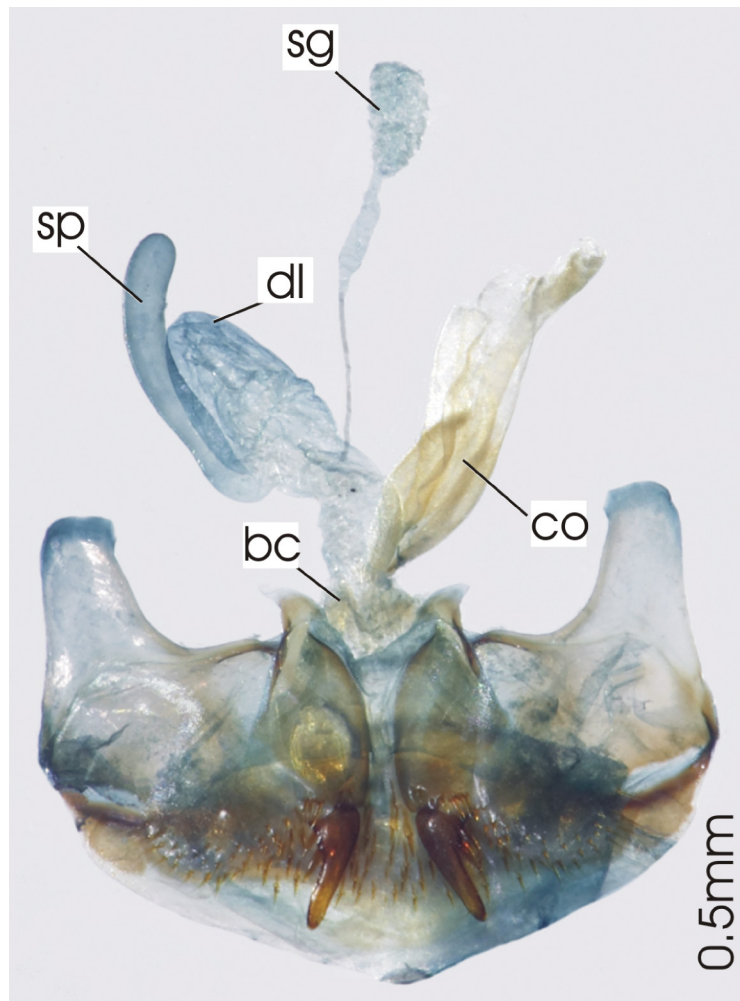


FIGURE 9. Female reproductive tract of *Platycoelus melliei*, ventral view. sg, spermathecal gland; sp, spermatheca; dl, dorsal lobe of bursa; bc, bursa copulatrix; co, common oviduct.

Etymology. The specific epithet is a the Latin word for smooth or polished. In allusion to the smooth proepisternum characteristic of this species.

List of species names of *Platycoelus* with general distributional information and notes on types and material examined for this study.

Platycoelus archboldi Darlington 1962, New Guinea. Examined paratype, ANIC.

Platycoelus biroi Darlington 1962, New Guinea. Examined holotype, HNHM.

***Platycoelus brigalowphilus* Will sp. nov.;** southern Queensland, Australia (Fig. 8). Holotype, QM.

Platycoelus caledonicus* Tschitschérine 1901 *status novum

= *Platysma (Chlaenioidius) caledonicum* Tschitschérine 1901. Examined possible syntypes from Fauvel collection (IRSNB). Two specimens examined were sent to Fauvel by Chaudoir and are either the syntypes or were additional specimens compared to the syntypes by Fauvel. The status and location of the type is unknown, but as these specimens appear to have been studied and identified by Fauvel and they are taken to function as exemplars of the concept he held for this species.

Differential characters relative to *P. poeciloides*: Elytra more oval, pronotum more sinuate with anterior and

posterior widths subequal. Legs, particularly the meso- and metatarsomeres, are relatively much longer and more gracile, the seta of the metatrochanter is absent. Male genitalia (Fig. 5C,D) are distinctive, being more symmetrical in the apical portion of the blade and much blunter at the tip.



FIGURE 10. Anterior view of right pro leg of male *Platycoelus chongheae* sp. nov. Arrow indicates the femoral notch.

Platycoelus chongheae Will sp. nov.; north Queensland, Australia (Fig. 8). Type series above and additional material in EMEC [n=55].

Platycoelus depressus Blanchard 1853, New Guinea. Studied images of holotype (MNHN) taken by T.L. Grzymala and five additional specimens, MBC.

= *Dalbertisia lucidula* Straneo 1939, New Guinea. Studied images of type (MCSN) taken by R. Poggi and L. Toledano.

Platycoelus hermes Will sp. nov.; northeast New Guinea (Fig. 8). Type series above.

Platycoelus interstitialis (Sloane 1910), Ashburton River, WA, Australia. Studied images of type (NMV) sent by K. Walker and an additional 14 specimens from MBC and UASM.

= *Chlaenioidius interstitialis* Sloane, 1910:392

Platycoelus irideomicans (Tschitschérine 1890) **status novum**; QLD, Australia, New Caledonia (adventive). Holotype examined (MNHN) and an additional 10 specimens from EMEC and MCB.

Differential characters relative to *P. poeciloides*: This species is very similar in general habitus to *P. poeciloides*, but the legs, particularly the meso- and metatarsomeres, are relatively much longer and more gracile, the seta of the metatrochanter is absent. Male genitalia (Fig. 6A,B) are distinctive, being more symmetrical in the apical portion of the blade and blunter at the tip.

Platycoelus jedlickai (Straneo 1938), Wahai, Maluku Islands. Holotype examined, BMNH.

= *Hypherpinus jedlickai* Straneo 1938. Note the holotype is missing its genitalia and most of its mouth parts. Both were apparently dissected by Straneo but are not with the type specimen presently.

Platycoelus major (Straneo 1942), New Guinea. Six specimens (EMEC, UCDC, ANIC) identified using Darlington's key (1962) and Darlington identified specimens deposited in ANIC.

= *Dalbertisia major* Straneo 1942

Platycoelus melliei (Montrouzier 1860), Australia, New Caledonia, Moluka Islands, New Britton Island. Numerous non-type specimens (EMEC, WAM, CAS, CMNH, UASM)[N>65].

= *Feronia melliei* Montrouzier 1860

= *Poecilus chlaenioides* MacLeay, 1888:476

= *Feronia herbaceus* Chaudoir, 1865

= *Feronia resplendens* Laporte de Castlenau, 1867.

***Platycoelus orion* Will sp. nov.;** north Queensland, Australia (Fig. 8). Type series above.

Platycoelus planipennis (MacLeay 1871) **status novum;** Australia, New Guinea. Type, AM and 13 additional specimens from EMEC, CMNH, UASM and QM.

= *Chlaenioidius planipennis* MacLeay 1871

Differential characters relative to *P. poeciloides*: Larger size, more oval and convex in form, intervals very flat and iridescent. Pronotum with basolateral impressions shallower and anterior width relatively narrower. Legs, particularly the meso- and metatarsomeres, are relatively longer and more gracile, the seta of the metatrochanter is absent. Male genitalia (Fig. 6I,J) are distinctive, being more symmetrical in the apical portion of the blade, narrower in ventral aspect, sharply flex ventrad in lateral view and blunter at the tip.

Platycoelus poeciloides (Chaudoir 1878), Australia. Type, MNHN. Studied images of type taken by A. Taghavian and an additional 92 specimens from EMEC, MBC, CMNH, UASM and WAM.

***Platycoelus politissimus* (White 1846) new combination;** EMEC and NZAC [N=4].

= *Platysma politissima* White 1846

= *Feronia (Psegmatopterus) anchomenoides* Chaudoir 1878.

= *Anchomenus hallianus* Broun 1921.

Notes: Based on examination of specimens and the redescription by Larochelle and Larivière (2007) I found no characters to distinguish this species as generically distinct. The redescription of *P. politissimus* Larochelle and Larivière (2007:58) is adequate but erroneously reports this species as having the "hindwings well developed." This is counter to their description in an earlier work (Larochelle and Larivière (2001:112) where they report that it is "brachypterous, incapable of flight." All specimens I have examined have a greatly reduced flight wing.

***Platycoelus politus* Will sp. nov.;** Queensland, Australia (Fig. 8). Type series listed above.

Platycoelus prolixus (Erichson 1842), Australia, Tasmania. Lectotype, MFNB. Studied images sent by B. Jaeger and an addition 13 specimens from EMEC and CUIC.

= *Pterostichus (Poecilus) prolixus* Erichson, 1842:127.

= *Feronia funebris* Castlenau, 1867:133, Mount Gambier, Australia, syntypes images (NMV) sent by K. Walker

Platycoelus sulcatulus (MacLeay 1888) **status novum;** Type examined, ANIC. Additional specimens from EMEC, CMNH, MBC, [N=50].

= *Poecilus sulcatulus* MacLeay 1888

Differential characters relative to *P. poeciloides*: this species is very similar in general habitus to *P. poeciloides*, but the legs, particularly the meso- and metatarsomeres, are relatively much longer and more gracile, the seta of the metatrochanter is absent. Male genitalia (Fig. 7 G,H) are distinctive, being more symmetrical in the apical portion of the blade, narrower in lateral aspect and blunter at the tip.

Key to *Platycoelus* species

- 1 Elytral intervals 1–7 with dense, minute punctulae on the discal region 2
- Elytral intervals 1–7 smooth, without punctulae on the discal region 11
- 2 Dorsally black colored, often with a more or less iridescent luster. No metallic colors except for a very slight aeneous tint in some individuals of the flightless *Platycoelus politissimus* (Fig. 4A) from New Zealand. Prosternal process at apex with or without raised apical margin 3
- Dorsally with obvious green (rarely with a blue tint) or bronze metallic color, without spectral iridescence. Flight wing full. Prosternal process at apex bordered with raised margin *Platycoelus melliei* (Fig. 2F)
- 3 Seta of metatrochanter absent. Metatarsomeres gracile (Fig. 11A) 4
- Seta of metatrochanter present. Metatarsomeres heavily built (Fig. 11B) *Platycoelus poeciloides*
- 4 Metatarsomeres 1–2 with dorsolateral sulcus clearly impressed and with distinct lateral carina 5
- Metatarsomere 1–2 without dorsolateral sulcus or with only a shallow often interrupted, short sulci and no carinae or with a very low rounded raised lateral bead 8
- 5 Lateral margins of pronotum with slight or no sinuation. Hind angles variously angled, but usually obtusely angled. Relative size of pronotum various. 6
- Pronotum rectilinear across base, lateral margins with obvious sinuation in basal fourth and then straight to the hind angles. Hind angles about right angled. Pronotum relatively small and narrow. *Platycoelus interstitialis* (Fig. 2B)
- 6 Proepisternum, mesepisternum, metepisternum and lateral edge of metasternum smooth or with a few scattered, small and very shallowly punctures. 7
- Proepisternum, mesepisternum, metepisternum and lateral edge of metasternum densely, shallowly punctate *Platycoelus sulcatulus* (Fig. 4D)
- 7 Pronotal lateral margins slightly to notably sinuate before the base. Aedeagus with narrowly rounded apex (Fig. 6B), ventral surface convex (Fig. 6A) *Platycoelus irideomicans* (probably a complex of species, Fig. 2D)
- Pronotal lateral margins not or only very slightly sinuate before the base. Aedeagus with broadly rounded apex (Fig. 7D), ventral surface flat (Fig. 7C). *Platycoelus politus* **sp. nov.**
- 8 Proepisternum, mesepisternum, metepisternum and lateral edge of metasternum densely, shallowly punctate 9
- Proepisternum, mesepisternum, metepisternum and lateral edge of metasternum smooth or with a few scattered small and very shallowly punctures. *Platycoelus brigalowphilus* **sp. nov.**
- 9 Pronotum finely and sparsely punctate over entire surface including the basolateral depressions. 10
- Pronotum coarsely and densely punctate over disc, especially across the basal third and in the basolateral depressions. *Platycoelus orion* **sp. nov.**
- 10 Elytral intervals with microsculpture not apparent, not visible at 50x magnification. Dorsally very shiny with prominent spectral iridescence. Elytral intervals very flat *Platycoelus planipennis* (Fig. 3B; 6L,J)
- Elytral intervals with microsculpture apparent, slightly transverse. Dorsally slightly dull or moderately shiny and with very slight spectral iridescence. Elytral intervals slightly convex *Platycoelus caledonicus* (Fig. 1D; 5C,D)
- 11 Head at the level of the posterior supraorbital setae punctate. 12
- Head at the level of the posterior supraorbital setae smooth. 13
- 12 Pronotal margins not sinuate, hind angles obtuse. Elytral intervals flat, shiny, iridescent. New Guinea. *Platycoelus archboldi* (Fig. 1A)
- Pronotal margins sinuate in basal third, hind angles nearly right angled. Elytral intervals convex, dull, black or with a slight aeneous tint. New Zealand *Platycoelus politissimus* (Fig. 4A)
- 13 Elytra fully striate or nearly so. Shallowly or deeply impressed 14
- Discal elytral striae obliterated, impressed only near apex for 1–6 and apical third of stria 7 18
- 14 Elytral intervals 8–9 densely punctate and/or clearly irregularly sculptured *Platycoelus major* (Fig. 2E, 6C,D)
- Elytral intervals 8–9 smooth 15
- 15 Metatrochanters reniform or elongate and rounded at the apex. Moderate sized (SBL<18.0mm), somewhat or very shiny and often distinctly iridescent 16
- Metatrochanters distinctly pointed apically. Large (typically SBL>20.0mm), dull, or only slightly shiny, black species. *Platycoelus prolixus*
- 16 Male profemur with deep transverse groove (Fig. 10). Pronotum slightly transverse and elytra elongate. Antennomeres 1–3 infuscated. Labrum infuscated or black 17
- Male profemur without deep transverse groove, same as in female. Pronotum notably transverse and elytra broad ovoid (Figs. 2A). Antennomeres 1–3 pale and not infuscated. Labrum concolorous reddish brown *Platycoelus hermes* **sp. nov.**
- 17 Metatrochanter without seta. Pronotum lateral margins distinctly arcuate. *Platycoelus chongheeae* **sp. nov.**
- Metatrochanter with setae. Pronotum lateral margins shallowly arcuate *Platycoelus depressus* (Fig. 1F, 5G,H)

- 18 Prosternal process at apex with raised margin apically, flight wings reduced *Platycoelus biroi* (Fig. 1B)
 - Prosternal process at apex without apical margin, flight wings fully developed *Platycoelus jedlickai* (Fig. 2D)

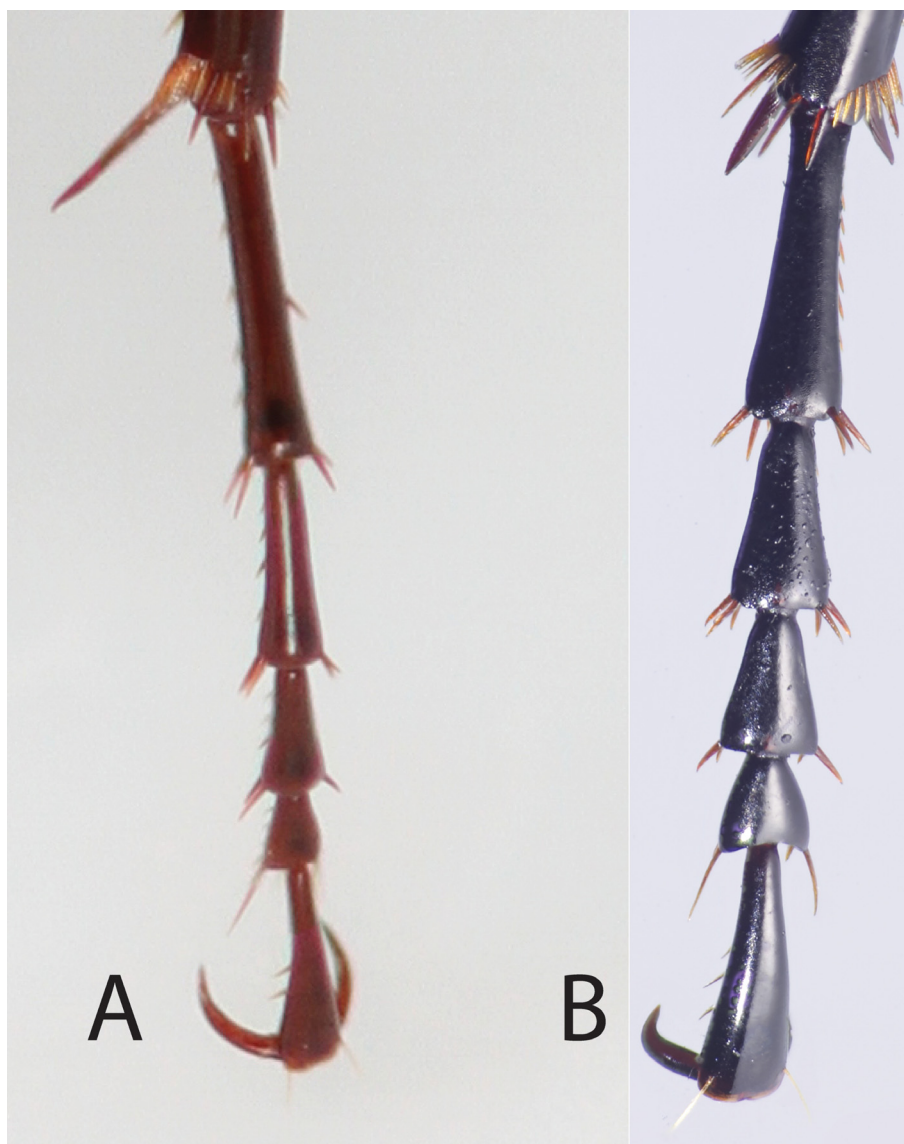


FIGURE 11. Dorsal view of metatarsomeres of A, *Platycoelus orion* sp. nov.; B, *P. poeciloides*.

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References cited

- Blanchard, C.E. (1842–1847) Planches I–XVII. In: *Dumont-d'Urville, J. S. C. Voyage au Pôle Sud et dans l'Océanie sur les Corvettes l'Astrolabe et la Zélée; pendant les années, 1837–40, par Hombron et Jacquinot*. Paris, Atlas of 140 plates.
 Blanchard, C.E. (1853) Description des Insectes. In: *Dumont-d'Urville, J. Voyage au Pole Sud et dans l'Océanie sur les corvettes l'Astrolabe et la Zélée pendant les années 1837–1840, sous le commandement de M.J. Dumont-d'Urville Capitaine de vaisseau. Atlas, Zoologie. Vol. 4*. Gide et Cie et J. Baudry, Paris, pp. 1–422.

- Bousquet, Y. (2002) *Additions and corrections to the world catalogue of genus-group names of Geadephaga (Coleoptera) published by Wolfgang Lorenz (1998)*. *Folia Heyrovskyana Supplement*. Vít Kabourek, Zlín, 78 pp.
- Britton, E.B. (1940) The Carabidae (Coleoptera) of New Zealand Part I. PTEROSTICHINI. *Transactions and Proceedings of the Royal Society of New Zealand*, 69, 473–508.
- Darlington, P.J. (1962) The Carabid beetles of New Guinea Part I. Cicindelinae, Carabinae, Harpalinae through Pterostichini. *Bulletin of the Museum of Comparative Zoology at Harvard College*, 126, 321–564.
- Emberson, R.M. (1993) The publication dates of the zoology plates of Dumont d'Urville's Voyage au Pôle Sud; nomenclatorial implications for New Zealand beetles. *New Zealand Entomologist*, 16, 17–21.
<http://dx.doi.org/10.1080/00779962.1993.9722644>
- ICZN (International Commission on Zoological Nomenclature) (1999) *International Code of Zoological Nomenclature*. 4th Edition. International Trust for Zoological Nomenclature, London, 306 pp.
- Larochelle, A. & Larivière, M.C. (2001) Carabidae (Insecta: Coleoptera): catalogue. *Manaaki Whenua-Landcare Research New Zealand*, No 43, 1–285.
- Larochelle, A. & Larivière, M.C. (2007) Carabidae (Insecta: Coleoptera): synopsis of supraspecific taxa. *Manaaki Whenua-Landcare Research New Zealand*, No 60, 1–188.
- Lorenz, W. (1998) *Systematic list of extant ground beetles of the world (Insecta Coleoptera "Geadephaga": Trachypachidae and Carabidae incl. Paussinae, Cicindelinae, Rhysodinae)*. 1st Edition. W Lorenz, Tutzing, 502 pp.
- Lorenz, W. (2005) *Nomina Carabidarum - a Directory of the Scientific Names of Ground Beetles (Coleoptera "Geadephaga": Trachypachidae and Carabidae, incl. Paussinae, Cicindelinae, Rhysodinae)*. 2nd Edition. W Lorenz, Tutzing, 993 pp.
- Moore, B.P. (1965) Studies on Australian Carabidae (Coleoptera) 4.–The Pterostichinae. *Transactions of the Royal entomological Society of London*, 117, 1–32.
<http://dx.doi.org/10.1111/j.1365-2311.1965.tb00042.x>
- Moore, B.P., Weir, T.A. & Pyke, J.E. (1987) Rhysodidae and Carabidae. Zoological Catalogue of Australia. In: D. W. Walton (Ed), vol. 4 (Coleoptera: Archostemata, Myxophaga and Adephaga). Australian Government Publishing Service, Canberra, ACT, pp. 20–230.
- Sloane, T.G. (1894) Studies in Australian entomology. No. VII. New genera and species of Carabidae (including some notes on previously described species, and synoptic lists of genera and species). *Proceedings of the Linnean Society of New South Wales*, 9, 393–455.
- Sloane, T.G. (1903) Studies in Australian Entomology No. XII. New Carabidae (Panagaeini, Bembidiini, Pogonini, Platysmatini, Platynini, Lebiini, with revisional lists of genera and species, some notes on synonymy, &c.). *Proceedings of the Linnean Society of New South Wales*, 28, 566–642.
- Tschitschérine, T. (1891) Quelques additions à l'Essai sur les Feronies de l'Australie et de la Nouvelle-Zélande du Baron de Chaudoir. *Horae Societatis Entomologicae Rossicae, variis sermonibus in Rossia usitatis editae*, 25, 160–171.
- Will, K.W. (2011) Taxonomic review of the Pterostichini and Loxandriini fauna of New Caledonia (Coleoptera, Carabidae). *ZooKeys*, 147, 337–397.
<http://dx.doi.org/10.3897/zookeys.147.1943>
- Will, K.W. (2015) A multigene phylogenetic analysis results in a redefinition of the genus *Notonomus* Chaudoir (Coleoptera, Carabidae) and descriptions of new species of the subgenus *Leiradira* Castelnau. *Invertebrate Systematics*, 29 (4), 1–32.
<http://dx.doi.org/10.1071/IS14021>
- Will, K.W. & Kavanaugh, D.H. (2012) A new species of *Lesticus* Dejean, 1828 (Coleoptera, Carabidae) from the Finisterre Range, Papua New Guinea and a key to the genera of pterostichine-like Harpalinae of New Guinea. *ZooKeys*, 246, 27–37.
<http://dx.doi.org/10.3897/zookeys.246.4112>