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## Generic Review of New Zealand Chrysomelinae (Coleoptera: Chrysomelidae)

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## Abstract

The leaf beetle subfamily Chrysomelinae is reviewed for New Zealand. The native fauna consists of six genera, three new, all of which are described: *Aphilon* Sharp, 1876; *Caccommolpus* Sharp, 1886; *Chalcolampra* Blanchard, 1853; *Mauroda* **gen. nov.**; *Nanomela* **gen. nov.**; *Zeaphilon* **gen. nov.**. *Chalcolampra* is the senior synonym of *Cyrtonogetus* Broun, 1915 (**comb. nov.**). These genera include 51 species, nine newly described and eight in new combinations, as follows: *Caccommolpus laticollis* (Broun, 1893) **comb. nov.**, from *Aphilon*; *C. pretiosus* (Broun, 1880) **comb. nov.**, from *Aphilon*; *Chalcolampra crassa* (Broun, 1915) **comb. nov.**, from *Cyrtonogetus*; *Maurodus arcus* **sp. nov.**; *M. cinctiger* (Broun, 1921) **comb. nov.**, from *Caccommolpus*; *M. impressus* (Broun, 1914) **comb. nov.**, from *Aphilon*; *M. lepidus* **sp. nov.**; *M. maculatus* (Broun, 1893) **comb. nov.**, from *Caccommolpus*; *M. nunni* **sp. nov.**; *M. occiduus* **sp. nov.**; *M. ornatus* (Broun, 1910) **comb. nov.**, from *Caccommolpus*; *M. owenensis* **sp. nov.**; *M. plagiatus* (Sharp, 1886) **comb. nov.**, from *Caccommolpus*; *M. supernus* **sp. nov.**; *Nanomela tiniheke* **sp. nov.**; *Zeaphilon marskeae* **sp. nov.**; *Z. mirandum* **sp. nov.**. All 11 species in the genus *Maurodus* are described and a key given for their identification. Type material of the New Zealand species of *Aphilon* (10 species), *Caccommolpus* (14 species) and *Chalcolampra* (13 species) is reviewed and lectotypes designated for 16 species, as well as *M. cinctiger*. A type species is designated for *Caccommolpus*: *C. globosus* Sharp, 1886. Holotypes are confirmed for 26 species. Seven genera and 13 species of exotic Chrysomelinae also occur in New Zealand and their presence is briefly reviewed. One of these exotics has been misnamed as *Paropsisterna variicollis* (Chapuis, 1877), a junior synonym of *P. cloelia* (Stål, 1860) (**syn. nov.**). A key to all genera of Chrysomelinae in New Zealand is provided.

**Key words:** host plants, bryophyte, endemic, biocontrol, introduced

## Introduction

The subfamily Chrysomelinae is the second largest of the New Zealand leaf beetles, next to Galerucinae (Maddison 2010), and contains 51 native species in six genera, as recognised in this study. An additional seven genera containing 13 introduced species are also present. The native fauna has few host records. Most native species are relatively small, cryptic, collected by sifting leaf-litter or moss, and probably nocturnal. Most native species are also apterous, a few are brachypterous, and only one species is fully winged. Larvae have not been fully described. In general, the group remains poorly-known, taxonomically and biologically. Here we review the chrysomelines, describe new taxa, revise the nomenclature and highlight taxonomic issues of the endemic New Zealand taxa, while making note of introduced species.

Chrysomelines can easily be distinguished from other New Zealand subfamilies by their round to oval bodies and widely separated antennal insertions (Fig. 1E), in addition to the presence of a well-developed lateral pronotal carina (Fig. 1D), oval and weakly transverse procoxae with exposed trochantins (Figs 3F, 14B) and a membranous anteclypeus (Fig. 5B) (Lawrence and Ślipiniski 2013): these characters distinguish the subfamilies from all others, including cassidines introduced to New Zealand that have the head covered by the anterior portion of the prothorax and potentially similar looking eumolpines that have the aforementioned characters but lacking the membranous anteclypeus. Much of the diversity was described by Thomas Broun (1880–1921) with a few species named by David Sharp (1876, 1882, 1886); both authors described what were recognised at their time as endemic genera, two of which were later treated as subgenera of the widespread Australian and Asian genus *Chalcolampra* Blanchard by Daccordi (1994; *Allocharis* Sharp and *Eualema* Broun). *Aphilon* Sharp (Figs 1A,B), *Caccommolpus* Sharp (Figs 1C,D), *Chalcolampra* (Figs 2–3), and *Cyrtonogetus* Broun (Fig. 3B) are presently placed in Phyllocharitini in the classification recognised by Daccordi (1994, 1996) but this system is artificial (Reid 2006). All genera require thorough systematic revision and the current taxonomic limits of *Aphilon*, *Caccommolpus* and *Chalcolampra* (*sensu lato*) are problematic.

The purpose of this study is to provide a framework for further study of New Zealand Chrysomelinae. We treat the genus *Cyrtonogetus* Broun as a junior synonym of *Chalcolampra*, describe three new genera and 10 new spe-



cies, and establish new combinations and lectotypy where needed. A key to all genera is included, as is background information on biology and geographic distribution, and a checklist is provided (Appendix 1). The exotic genera in New Zealand are included so that all Chrysomelinae present in this country are identifiable to genus.

## Material and methods

Specimens examined are from the Auckland War Memorial Museum (AMNZ), Natural History Museum, London (BMNH), Australian Museum Research Institute, Australian Museum, Sydney (AMS), Australian National Insect Collection, Canberra (ANIC), Entomological Museum, Lincoln University, Canterbury (LUNZ), and the New Zealand Arthropod Collection, Auckland (NZAC). Two-letter acronyms for geographic distributions follow Crosby *et al.* (1998). Material examined was georeferenced where possible.

Examination of type material and protocols follow Lord & Leschen (2014) and Leschen & Newton (2015) with red labels affixed to holotypes and lectotypes and blue labels affixed to paralectotypes in the following format: “LECTOTYPE *Aphilon sternalis* Broun, 1921 designated by R. Leschen, 2015”. The chrysomeline specimens contained in the Broun Collection (BMNH), did not have the typical round “type” labels with coloured borders. A large number of specimens were dissected and remounted by Mauro Daccordi with male genitalia extracted and glued onto newer points or cards. The female terminalia were often remounted in a “window-mount” which consisted of a thick card with a circular cut containing sleeves of acetate that held genitalia and terminalia within mounting media.

Morphological terms used by chrysomeloid workers are not entirely uniform. Here we follow the terminology of Lawrence *et al.* (2010) and Švácha & Lawrence (2015). Terms for the characters on the frons and vertex were modified or directly referenced from various sources including Konstantinov & Vandenburg (1996) and can be seen in Figs 1E, 3D, 5B, 6D, and 7E. Paired lines that mark the inner margin of the *postantennal calli* and a medial line that arises from the frontoclypeal suture are referred to as *postclypeal lines*. Most New Zealand species have the *median postclypeal line* absent while the *lateral postclypeal lines* are variable. The postantennal calli tend to be weakly developed and in some taxa the position is marked by pale areas of the cuticle indicating muscle insertion points. The area below the eye in many chrysomelines may bear antennal grooves that may have well-developed carinae on either side where the antennae may rest (Reid *et al.* 2009). In New Zealand forms the groove may have a ridge just below the eye (Fig. 18A), ridges may be completely absent, though a groove may still be present (Fig. 18C), and there may be a distinct antennal groove indicated by ridges on either side (Fig. 18B). The *shape of the mentum* refers to the visible portion, excluding the area hidden beneath the *intermaxillary process*.

At the corners of the pronotum of many beetles, including chrysomelids, there may be setiferous punctures referred to as *trichobothria* by most chrysomelid workers. In chrysomelines, and in all New Zealand genera, there are separate asetose glandular openings on the prothorax (and elsewhere on the body, e.g., the elytra) that are observed in cleared dissections (Figs 18D, E) and have ducts that penetrate deep into to the body cavity (e.g., Pasteels *et al.* 1988). In the New Zealand endemic taxa, pronotal ducts are serially arranged and open above the lateral carina, some of which have smaller proximal ducts indicating, perhaps, the production of two different compounds.

Presence of *humeral calli* at the anterior corners of the elytra are common in winged beetles, but when wings are reduced or absent the calli likewise may be reduced to absent. A short *midbasal impression* or stria may be present between the humeral callus and the scutellary shield. Genitalia for only a handful of species for each genus were examined, apart from *Maurodus*, and the description of these and other internal characters should be regarded as provisional.

Length was measured from the midline of the anterior pronotal margin (not the head because this is commonly hidden) to the tip of the elytra; width was measured at the greatest widths of the pronotum and the elytra.

## Chrysomelinae

**Diagnosis.** Body subovoid to ovoid, sides of body somewhat parallel-sided to rounded, dorsum generally glabrous. Head partly concealed but not covered entirely by pronotum, not constricted behind eyes. Antennal grooves on head present or absent. Antennal insertions not approximate. Pronotum with lateral carina; procoxal cavities open

or closed behind. Procoxae ovate and weakly transverse. Tergite VII hidden or almost completely hidden in dorsal view.

**Description.** Length 1.5–8.0 mm. Body shape predominantly subovoid to ovoid; prothorax and elytra often forming a continuous outline in dorsal view; tergite VII hidden or almost completely hidden in dorsal view. Dorsum brightly uni- or bicoloured or dull, glabrous. Dorsal surfaces usually smooth; pronotal disc often with non-uniform punctation coarser at the base. Head prognathous rarely forming a short muzzle with genae extending a short distance beyond level of antennal and maxillary insertions, retracted into prothorax, not covered entirely by pronotum, not strongly constricted behind eyes; deep grooves absent on the vertex, but postantennal calli and postclypeal lines may be present. Eyes almost circular to strongly transverse-oblong, with or without anterior emargination; flat to strongly protuberant. Clypeus transverse to trapezoidal, anterior margin straight. Genae usually short and not extended greatly beyond mandibular insertions (long in some species of *Nanomela*). Antennal insertions exposed from above, and widely separated, postantennal calli present or absent; when not delimited by a line, pale cuticular spots may be present; subantennal grooves absent or present. Frontoclypeal suture present or absent; lateral postclypeal lines present or absent, medial postclypeal line absent. Antennae 11-segmented, filiform, subfiliform, or clavate. Mandibles with two incisors, terebral edge with (*Nanomela*) or without serrate edge, prostheca setose. Pronotum transverse, length usually 2.3–2.5x its width, usually widest at base, lateral pronotal carinae complete, with margin or bead visible from above; each anterior and posterior angle with or without trichobothrium. Procoxal cavities transverse-ovate or rounded, externally open, narrowly opened or closed. Scutellary shield usually triangular and anteriorly rounded (sometimes reduced or absent). Elytra in combination varying in shape from almost circular to elongate, irregularly punctate or with as many as 16 distinct puncture rows; elytral apices concealing all abdominal tergites. Hind wings absent or present but often reduced. Metaventricle with or without subcoxal lines, discrimin and transverse metaventral (metakatepisternal) suture present or absent. Legs with globular to transverse procoxae that are not projecting; femora fusiform to claviform; tibial apices generally widened or clubbed and sometimes weakly dimorphic (e.g., male tibiae are slightly more robust and elbowed); tibial spurs absent; tarsi 5-5-5 or 4-4-4 (*Nanomela* and smaller species of *Aphilon* lacking tarsomere 4 or tarsomeres 4 and 5 fused) with tarsomere 3 apically bilobed or truncate, first tarsomeres often expanded in males; tarsal claws simple, bifid or appendiculate. Abdomen with five ventrites, free and lacking deep impressions, ventrite 1 generally about twice as long as 2, with or without postcoxal lines; tergite VII usually forming sclerotised pygidium, usually completely hidden by elytra in dorsal view. [Based on Reid 2014]

**Comments.** The diagnosis and short description above will distinguish New Zealand members of the chrysomelines from other subfamilies occurring in the Pacific region. There are approximately 130 genera, with over 3,000 species, worldwide (Reid 2017). Two tribes are recognised by Reid (2014), Timarchini and Chrysomelini, the latter variously subdivided into 4–12 subtribes (Seeno & Wilcox 1982; Daccordi 1994; Bouchard *et al* 2011), with all of the New Zealand endemic genera being placed into the Phyllochaitini of Daccordi (1994). Details of the composition of the endemic genera are below. The few introduced members of the mainly Australian subtribe Paropsina (*sensu* Daccordi 1994) feed on exotic *Acacia* and *Eucalyptus* and are ovate with epipleura completely hidden in lateral view (Fig. 17B, D–F).

Chrysomeline larvae and adults are generally external feeders on plants, feeding on leaves, rarely flowers, and usually, not on pollen. Their plant hosts are usually core eudicots, rosids and asterids, but a few species feed on Bryophyta (Reid 2017). The host associations of New Zealand endemic species are poorly known because most species are cryptic, ground-dwelling and probably nocturnal. Attempts to obtain additional specimens of poorly collected forest-dwelling taxa by sifting mostly mosses during summer 2018 in the South Island, resulted in additional geographic records but few specimens (i.e., *Maurodus ornatus* (Broun) and *Zeaphilon marskeae*, **nov. sp.**), but confirmed that many species are bryophyte specialists. Larvae are rarely collected and have not been described. The larvae of *Aphilon* have oddly fused terga and have been collected feeding on liverworts. The single illustration of an undetermined *Chalcolampra* larva (as *Allocharis* in Reid [1995]) shows an individual with a well sclerotised circular plate formed from terga VII–IX indicating burrowing habits and is the same species that has been recorded by Wardle *et al.* (1971) feeding on the composite *Olearia colensoi*.

**Included genera.** *Aphilon* Sharp, 1876 (endemic), *Caccolampus* Sharp, 1886 (endemic), *Chalcolampra* Blanchard, 1853 (= *Allocharis* Sharp, 1882, = *Cyrtonogetus* Broun, 1915, **syn. nov.**, = *Eualema* Broun, 1903) (Southeast Asia, Australia and New Zealand), *Chrysolina* Motschulsky, 1860 (introduced for biological control), *Maurodus* **gen. nov.** (endemic), *Dicranosterna* Motschulsky, 1860 (introduced), *Gonioctena* Chevrolat, 1836 (in-

troduced), *Nanomela* **gen. nov.** (endemic), *Paropsis* Olivier, 1807 (introduced), *Paropsisterna* Motschulsky, 1860 (introduced), *Peltoschema* Reitter, 1888 (introduced), *Zeaphilon* **gen. nov.** (endemic), *Trachymela* Weise, 1908 (introduced).

### Key to New Zealand Genera

The following key to genera includes invasive or deliberately introduced genera (\*) which are briefly treated at the end of this publication.

1. Epipleura hidden in lateral view; last maxillary palpomere greatly expanded and apically truncate (Fig. 17H); procoxal cavities widely open (Fig. 17J), tarsal claws toothed. . . . . 2
- Epipleura visible in lateral view (Figs 1B, D); last maxillary palpomere not or only slightly expanded apically (Fig. 1E) and typically conical; procoxal cavities closed or slightly open (Figs 3F, 14B); tarsal claws simple (Fig. 15D) . . . . . 6
- 2(1) Elytral surface smooth, striate and with relatively weakly impressed punctures (Fig. 17E) . . . . . 3
- Elytral surface usually verrucose, at least apical third, or if not, elytral punctures large, deep and not distinctly striate (Figs 17B, D) . . . . . 4
- 3(2) Posterior angles of pronotum with a trichobothrium; smaller and more depressed, length under 5 mm; feeding on *Acacia* . . . . . *Peltoschema*\*
- Pronotal angles without trichobothria; larger and more convex, length over 5 mm; feeding on *Eucalyptus* . . . . . *Paropsisterna*\*
- 4(2) Prosternum with short right-angled lateral lobes at base of prosternal process (Fig. 17J); sides of pronotum unevenly margined (Fig. 17K) . . . . . *Paropsis*\*
- Prosternum without pair of lateral lobes; pronotal lateral carinae evenly convex . . . . . 5
- 5(4). First maxillary palpomere flattened in cross-section (Fig. 17G); elytral surface smooth between punctures (Fig. 17B), punctation more or less confused; inner margin of elytral epipleuron with row of short erect setae . . . . . *Dicranosterna*\*
- First maxillary palpomere more or less rounded in cross-section (Fig. 17I); elytral surface verrucose with punctures arranged into weakly-organised striae (Fig. 17F); elytral epipleuron without row of erect setae . . . . . *Trachymela*\*
- 6(1) Meso- and metatibiae with large angular subapical projections (Fig. 17C); colour pale yellowish, not dark or metallic . . . . . *Gonioctena*\*
- Tibiae lacking subapical projections; colour dark, with or without pale pattern, sometimes with metallic lustre . . . . . 7
- 7(6) Pronotum with pair of sublateral grooves (Fig. 17A); apical quarter of elytral epipleuron with a row of short erect setae . . . . . *Chrysolina*\*
- Pronotum without sublateral grooves; epipleuron without row of short erect setae . . . . . 8
- 8(7). Tarsal claws appendiculate or toothed; pronotal angles bearing erect setae or trichobothria . . . . . *Chalcolampra*
- Tarsal claws simple; pronotal angles lacking erect setae or trichobothria . . . . . 9
- 9(8). Metaventrite with subcoxal lines convex forming a broad axillary space . . . . . 10
- Metaventrite with subcoxal lines parallel to coxal cavity forming a narrow ridge or space (Figs 9D, 10D, 11E) . . . . . 11
- 10(9). Abdominal ventrite I with subcoxal lines convex, forming a broad axillary space (Fig. 1F) . . . . . *Caccommolpus*
- Abdominal ventrite I with subcoxal lines parallel to metacoxal cavity forming a narrow ridge (Fig. 14C) . . . . . *Aphilon*
- 11(9). Anterior of metaventral intercoxal lobe truncate; mesoventral intercoxal lobe reduced to a thin elevated transverse ridge, with straight anterior and posterior edges (Fig. 6B) . . . . . *Maurodus* **gen. nov.**
- Anterior of metaventral intercoxal lobe convex; mesoventral intercoxal lobe reduced to a thin elevated ridge, with convex anterior and concave posterior edges (Figs 11E, 14D) . . . . . 12
- 12(11). Body length less than 2.5 mm; eyes reduced and consisting of 1 to about 15 ommatidia (Figs 15A–C); antenna with well-formed antennal club and inserted far from apex of head (Figs 10A–D), prosternal process not vaulted, tarsomere 3 not distinctly bilobed (Figs 15D, E H) . . . . . *Nanomela* **gen. nov.**
- Body length over 2.5 mm; eyes well-developed with over 30 ommatidia (Fig. 11F); antenna without club and inserted at apex of head; prosternal process vaulted (Fig. 11F), tarsomere 3 distinctly bilobed (Fig. 11C) . . . . . *Zeaphilon* **gen. nov.**

### *Aphilon* Sharp, 1876

(Figs 1A, B, E, 13A)

*Aphilon* Sharp, 1876:100. Type species: *Aphilon enigma* Sharp, 1876, by monotypy.

**Diagnosis.** Body length 1.3–3.2 mm; round and strongly convex; unicoloured, sometimes with a green or blue metallic sheen. Antennae clavate. Procoxal cavities externally open. Hindwings absent. Anterior edge of metaventrite curved or rounded; metaventral lines distal forming a broad surface behind the mesocoxae. First abdominal ventrite with subcoxal lines parallel and not extending to middle of ventrite.

**Description.** Length 1.3–3.20 mm. Body rounded, strongly convex, globose; colouration dark brown to black and sometimes with a green or blue metallic sheen.

Head not forming a short muzzle with genae extending a short distance beyond level of antennal and maxillary insertions, scarcely visible in dorsal view with mouthparts directed ventrally, vertex or frons wide, nearly flat to feebly convex; postantennal calli weakly developed, pale areas present. Eyes small, elliptical, and convex, coarsely faceted and consisting of about 20 to 30 ommatidia; inner margin of eye without a small seta. Antennae relatively short, not reaching far beyond the hind margin of the pronotum; antennal club well developed (antennomeres 7–11); insertions contacting or not the margin of eye (distance between insertion and margin of eye is less than diameter of insertion), with distance between insertions about 3 times length of the scape. Clypeus triangulate or semicircular, frontoclypeal suture present, frons without postclypeal lines. Labrum somewhat rectangular and transverse with curved sides, anterior margin emarginated, surface with 3 setae per side, anterior margin at middle lacking distinct setal fringe, tormae long and thin, over 3 times longer than labral plate. Mandible lacking serrate terebral edge. Maxillary palpus relatively long, palpomere 1 longer than wide, palpomere 2 transverse and shorter than wide, palpomere 3 about 2 times longer than wide, greater in length than palpomere 2, conical to weakly acute. Labium with relatively narrow ligula, narrower than lengths of palpomeres 1 and 2 combined, apex undivided, palpal insertions separated by at least the width of the basal palpomere, palpi relatively short, palpomere 1 as wide as long, palpomere 2 slightly longer than wide, palpomere 2 longer than wide with narrowed and truncated apex. Mentum rectangular and transverse 3 to 5 times wider than long to almost quadrate; width of mentum equal to, or shorter than the length of labial palpomere 1. Intermaxillary process delimited behind by a ridge and not extending anteriorly far beyond maxillary insertions, bead present or absent.

Pronotum transverse, very convex, with a bead along anterior and lateral margins, its base as wide as or just slightly shorter than the base of elytra; anterior margin straight in dorsal view, lateral margins rounded and converging anteriorly, anterior angles not projecting and rounded to subacute; sides distinctly converging anteriorly and straight or weakly curved, posterior margin weakly convex; posterior angles acute; disc convex without sublateral groove, trichobothria absent, coarse and dense punctures at middle of posterior margin present or absent; lateral carinae complete. Prosternum not vaulted at middle (weakly vaulted in one undescribed species), without transverse notches in front of coxal cavities; prosternal lines present and parallel and extending forward reaching anterior edge of sternite, or divergent anteriorly, or absent; prosternal process broad, short and extending a short distance behind procoxae, expanded laterally behind coxae but not contacting the hypomerall process; posterior weakly emarginate, procoxal cavities externally open. Notopleural suture distinct. Scutellary shield small, triangular with an acute or rounded apex or not visible between elytral bases. Elytra short, convex, humeral calli and midbasal striae absent; surface smooth to punctate punctures weakly impressed confused to striate; epipleura wide and well developed, visible in lateral view, apex without ctenidium. Hind wings absent. Mesoventrite mostly hidden in ventral view, posterior portion between mesocoxae visible as a narrow strip; mesal part of mesoventrite with vertical surface confluent with prepectus. Meso- and metacoxae widely separated. Metaventricle shorter or longer than abdominal ventrite I at midline, mesocoxal process very short and broad with a curved or rounded anterior margin, metaventral lines not parallel, discrimin absent, transverse metaventral (metakatepisternal) suture present and crossing the midline or absent. Metendosternite lacking stalk and laminae, widely spaced lateral arms with subapical anterior tendons. Legs with only metatibiae flattened in cross section, not clubbed and gradually widened distally, apically setose; tarsomeres usually 5-5-5 (some smaller species may be 4-4-4) and variable, T1 2–3 times longer than T2, about 2 times longer than wide, T2 transverse and wider than long, T3 about as wide as long and deeply incised (bilobed), tarsomere 4 minute or absent, T5 longer than T2+T3, claws simple, tarsomere 1 on all or anterior and middle legs of male greatly enlarged.

Abdominal ventrite 1 long, but shorter than ventrites 1–5 combined, with a broad metacoxal process that is wider than long and with a straight apical margin, ventrites 2–4 equal in length and much shorter than ventrite 1, ventrite 5 longer than ventrites 3 and 4 combined with rounded posterior margin; first abdominal ventrite with subcoxal lines parallel to coxal cavity not extending to middle of ventrite. Aedeagus curved in lateral view and rounded in cross section; apex in dorsal view subrounded to subacute or apiculate; flagellum present or absent. Ovipositor with coxites elongate, more than 3 times longer than wide and lacking a stylus. Spermatheca curved and C-shaped, collum present, with spermathecal duct inserted onto base, spermathecal gland absent.

**Comments.** This endemic genus contains 10 species with the exclusion of one species transferred to *Maurodus* (*A. impressus* Broun, 1914) and two species transferred to *Caccommolpus* (see below). All live at ground level and are flightless having relatively short metaventra and lack hindwings. *Aphilon* species are similar to some *Caccommolpus*, but most species can be distinguished by their small size and almost completely round and highly convex bodies,



though a break in contour is present in *A. latulum* Broun, but, most importantly, all have parallel subcoxal lines on abdominal ventrite 1 (including larger species like *A. monstrosum* Broun, 1886). Most *Aphilon* have distinctly clavate antennae, but this character is also present in *Nanomela* and *Zeaphilon*. The round and highly convex body shape of *Aphilon* distinguishes this genus from members of *Maurodus*, *Zeaphilon*, and *Nanomela*. Some species have been collected at night feeding on mosses and liverworts (Kuschel 1990), otherwise they can be collected by sifting leaf litter.

We are unable to provide a key to the species as the exact number of valid species is undetermined and the status of the described species must be confirmed by further revision of both *Aphilon* and *Caccommolpus*. However the type material is reviewed below, with lectotype designations where appropriate. The unusual larva with fused terga noted by Reid & Leschen (2003) needs full description.

**Included species.** *Aphilon convexum* Broun, 1893, *A. enigma* Sharp, 1876, *A. latulum* Broun, 1893, *A. minutum* Broun, 1880, *A. monstrosum* Broun, 1886, *A. praestans* Broun, 1893, *A. punctatum* Broun, 1880, *A. scutellare* Broun, 1893, *A. sobrinum* Broun, 1886, *A. sternalis* Broun, 1921.

**Distribution.** North Island, South Island. Most of the specimens in the NZAC are from the North Island; however, there is a small number of specimens of a new species from Fiordland.

### *Aphilon convexum* Broun, 1893

*Aphilon convexum* Broun, 1893b:1310. Type locality: Howick.

**Comment.** Broun based the description of this species on a single specimen that we located in the BMNH.

**Type examined.** Holotype (BMNH): remounted on two acetate cards, one with beetle, one with right antenna and female genitalia, “2302. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Howick // *Aphilon convexum* [in Broun’s hand] // *Aphilon convexum* Broun [handwritten] det. M. Daccordi [printed] 1982 [in Daccordi’s hand]”.

### *Aphilon enigma* Sharp, 1876

*Aphilon enigma* Sharp, 1876:100. Type locality: Auckland.

**Comment.** Sharp based the description of this species on a single specimen that we located in the BMNH.

**Type examined.** Holotype (BMNH): remounted on card with abdomen, left proleg, right antenna, female terminalia, and mouthparts in window-mount, “*Aphilon enigma* Type M. S. New Zealand<sup>d</sup>. [in Sharp’s hand; top of original card trimmed] // Type H.T. [round label with red border] // Sharp Coll. 1905-313. // *Aphilon enigma* Sharp [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi’s hand]”.

### *Aphilon latulum* Broun, 1893

*Aphilon latulum* Broun, 1893b:1310. Type locality: Stratford, Taranaki.

**Comment.** Broun based the description on a single specimen that we located in the BMNH.

**Type examined.** Holotype (BMNH): re-mounted on two acetate cards, one with main body and partially detached left antenna and detached right proleg, one with right antennae, right midleg and female terminalia, “2303. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Stratford // ♀ [in Broun’s hand] // *Aphilon latulum* [in Broun’s hand] // *Aphilon latulum* Broun [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi’s hand]”.

### ***Aphilon minutum* Broun, 1880**

*Aphilon minutum* Broun, 1880: 631. Type locality: Whangarei Harbour.

**Comment.** Broun based this species on three specimens, one of which was in the BMNH that we designated as the lectotype to stabilise the epithet.

**Type examined.** Lectotype (BMNH): re-mounted on two acetate cards, one with body and male genitalia, one with left antenna [left meso- and metatarsi missing], “1107. [olive green label] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Manaia // *Aphilon minutum* [in Broun’s hand] // *Aphilon minutum* Broun [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi’s hand]”.

### ***Aphilon monstrosum* Broun, 1886**

*Aphilon monstrosa* Broun, 1886: 874. Type locality: Waitakarei Range.

**Comments.** Broun based this species on two specimens, one of which was in the BMNH that we designated as the lectotype to stabilise the epithet. Another specimen in the Broun collection from Titirangi, was not considered a syntype because it was collected at a much later date.

**Type examined.** Lectotype (BMNH): re-mounted dorsally on card with aedeagus extracted and mounted on side of card, “1556. [olive green label] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Waitakarei // *Aphilon monstrosa* [in Broun’s hand] // *Aphilon monstrosa* Broun [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi’s hand]”.

### ***Aphilon praestans* Broun, 1893**

*Aphilon praestans* Broun, 1893b: 1309. Type locality: unknown (Clevedon?)

**Comments.** Broun based the description on a single male specimen collected by Mr. George Munro without mentioning the locality. The holotype in the BMNH bears a collecting label from Clevedon.

**Type examined.** Holotype (BMNH): re-mounted on point with aedeagus extracted and mounted on point, “2301. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Hunua Clevedon [in Broun’s hand] // *Aphilon praestans* [in Broun’s hand] // *Aphilon praestans* Broun [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi’s hand]”.

### ***Aphilon punctatum* Broun, 1880**

*Aphilon punctatum* Broun, 1880: 630. Type locality: Parua Forest (Whangarei Harbour).

**Comment.** Broun based this species on one specimen that we located in the BMNH.

**Type examined.** Holotype (BMNH): re-mounted on point with female terminalia mounted separately on acetate card [left antenna missing antennomeres 2–11], “1106. [olive green label] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Parua // *Aphilon punctatum* [in Broun’s hand] // *Aphilon punctatum* Broun [handwritten] det. M. Daccordi [printed] 1982 [in Daccordi’s hand]”.

### ***Aphilon scutellare* Broun, 1893**

*Aphilon scutellare* Broun, 1893b:1501. Type locality: Maketu (Hunua Range).

**Comment.** Broun based this species on one specimen that we located in the BMNH.

**Type examined.** Holotype (BMNH): re-mounted on acetate cards, one with body, one with right antenna and female terminalia, “2586. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Hunua Maketu [in Broun’s hand] // Aphilon scutellare. [in Broun’s hand] // Aphilon scutellare Broun [handwritten] det. M. Daccordi [printed] 1982 [in Daccordi’s hand]”.

### *Aphilon sobrinum* Broun, 1886

*Aphilon sobrina* Broun, 1886:875. Type locality: Waitakere.

**Comment.** Broun based this species on one specimen that we located in the BMNH.

**Type examined.** Holotype (BMNH): re-mounted on point, cleared abdomen and female terminalia on acetate card [left antennomeres 2–11, right mid-tarsal claw, and left tarsus missing], “1557. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Waitakere // Aphilon sobrina. [in Broun’s hand] // Aphilon sobrina Broun [handwritten] det. M. Daccordi [printed] 1982 [in Daccordi’s hand]”.

### *Aphilon sternalis* Broun, 1921

*Aphilon sternalis* Broun, 1921b:664. Type locality: Titirangi (Auckland).

**Comment.** Broun based this species on two specimens, one of which was in the BMNH and designated as the lectotype to stabilise the epithet, the other, a female retained by A. E. Brookes, has not been located.

**Type examined.** Lectotype (BMNH): re-mounted on point with male genitalia extracted and glued to side, “4253. ♂ [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Titirangi 3.6.1916. [in Broun’s hand] // Aphilon sternalis. [in Broun’s hand] // Aphilon sternalis Broun [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi’s hand]”.

### *Cacomolpus* Sharp, 1886

(Figs 1C, D, F, 13B)

*Cacomolpus* Sharp, 1886:447. Type species: *Cacomolpus globosus* Sharp, 1886, **here designated**.

**Diagnosis.** Body length 2.5–5.8 mm; rounded to elliptical, strongly convex; unicoloured and rarely metallic green. Antennae very weakly clavate, filiform to subfiliform. Procoxal cavities externally open. Hindwings absent. Anterior edge of metaventrite straight; metaventral lines distal, and not parallel and often extending to middle of ventrite. First abdominal ventrite with well-developed convex subcoxal lines sometimes extending to middle of ventrite.

**Description.** Length 2.4–5.8 mm. Body rounded to elliptical, moderately to strongly convex; dorsal colouration unicoloured dark to black, rarely with green metallic sheen.

Head not forming a short muzzle with genae extending a short distance beyond level of antennal and maxillary insertions, visible from above with mouthparts directed ventrally or anteroventrally, wide vertex or frons, nearly flat to feebly convex; postantennal calli weakly developed or absent, pale areas present or absent. Eyes relatively well-developed and weakly or not protuberant, coarsely faceted and consisting of about 20–30 ommatidia; inner margin of eye without a small seta. Antennae long, filiform, subfiliform or weakly clavate, antennomeres 5-, 6- or 7–11 forming a weak club, reaching beyond the hind margin of the pronotum; eye not contacting insertion in most species, with distance between insertion and margin of eye at most the diameter of insertion, distance between insertions about 4–6 times length of the scape. Clypeus transverse to somewhat trapezoidal, anterior margin straight; frontoclypeal suture present or very weakly impressed; postclypeal lines present or absent. Labrum somewhat rectangular to quadrate, anterior margin weakly to moderately emarginated and sides rounded, surface with 3–4 elongate setae per side, anterior margin at middle lacking distinct setal fringe, tormae long and thin, about 2–3 times longer than labral plate. Mandible with terebral edge simple. Maxillary palpus relatively long, palpomere 1 longer than wide, palpomere 2 transverse and shorter than wide, palpomere 3 about 2 times longer than wide, greater in length

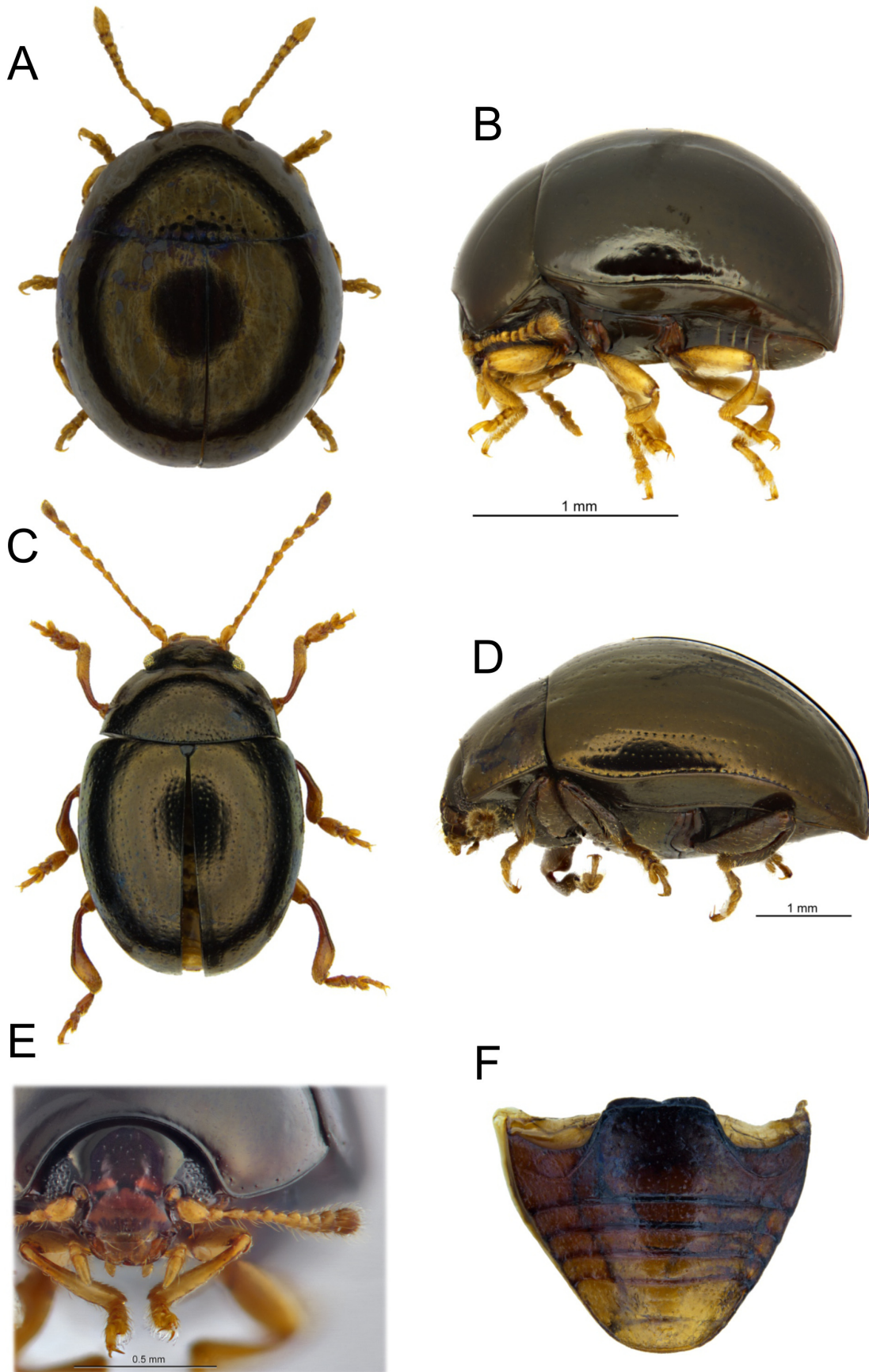


than palpomere 2, conical to weakly acute with truncated apex. Labium with relatively narrow ligula, less or equal to the width to the lengths of palpomeres 1 and 2 combined, apex not divided at apex, palpal insertions separated by less than the width of the basal palpomere, palpi relatively short, palpomere 1 more or less quadrate, palpomeres 2 and 3 each two times longer than wide with palpomere 3 conical. Mentum rectangular and transverse 2 to 5 times wider than long, width of mentum about equal to the length of labial palpomere 3. Intermaxillary process basically absent and not extending anteriorly beyond maxillary insertions, delimited behind by a ridge or a bead.

Pronotum transverse and convex, with a bead along anterior and lateral margins; posterior edge as wide as base of elytra; anterior margin weakly moderately emarginated, anterior angles weakly projecting and rounded to subacute; sides distinctly converging anteriorly and straight or curved, posterior margin weakly convex or sinuate; posterior angles acute; disc moderately to strongly convex without sublateral groove, trichobothria absent, coarse and dense punctures at middle of posterior margin absent; lateral carinae complete. Prosternum vaulted at middle between prosternal lines, or not, without transverse notches in front of coxal cavities; prosternal lines present and usually parallel (rarely convergent anteriorly, e.g., *C. flectipes* Broun), and extending forward almost reaching anterior edge of sternite; prosternal process broad, short and extending a short distance behind procoxae, expanded just slightly laterally behind coxae and not contacting the hypomerall process (hypomerall process acute to rounded); posterior margin straight, weakly rounded or concave, procoxal cavities externally open. Notopleural suture distinct. Scutellary shield visible and relatively small, triangular with rounded, subacute or acute apex. Elytra strongly to moderately convex, humeral calli and midbasal striae mainly absent (rarely present and poorly developed); surface smooth, punctures weakly to deeply impressed and striate (rarely confused), epipleura wide and well developed, visible in lateral view, apex without ctenidium. Hind wings absent. Mesoventrite mostly hidden in ventral view, posterior portion between mesocoxae visible as a narrow strip; mesal part of mesoventrite with vertical surface confluent with prepectus. Meso- and metacoxae widely separated. Metaventrite subequal to length of abdominal ventrite 1 at midline, mesocoxal process very short and broad with a straight or rounded anterior margin, metaventral lines distal and not parallel to coxal cavity, especially laterad, discrimen present and transverse metaventral (metakatepisternal) suture present but does or does not cross the midline. Metendosternite lacking stalk and laminae, widely spaced lateral arms with subapical anterior tendons. Legs with tibiae variable, flattened in cross section or not; meso- and metatibiae clubbed or gradually expanded distally with outer edge evenly curved, apically setose; tarsomeres 5-5-5, tarsomere 1 longer than wide and 2-3 times longer than T2 (up to 4 times more in males), T2 transverse and wider than long and as long as T3, T3 about as wide as long or transverse and deeply to weakly incised (bilobed), tarsomere 4 minute, T5 about 2-3 times long as T3, claws simple.

Abdominal ventrite 1 long, but shorter than ventrites 2-5 combined, with a broad metacoxal process that is wider than long and with a straight apical margin, ventrites 2-4 equal in length and much shorter than ventrite 1, ventrite 5 subequal or longer than ventrites 3 and 4 combined with rounded posterior margin; first abdominal ventrite with subcoxal lines distal to coxal cavity and extending to middle of ventrite. Aedeagus curved to weakly curved in lateral view and rounded in cross section; apex in dorsal view subacute or rounded; flagellum present or absent. Ovipositor with coxite elongate, at least 4 times longer than wide, stylus absent. Spermatheca curved, U-shaped, collum absent and present with spermathecal duct inserted onto base, spermathecal gland absent.

**Comments.** This endemic genus comprises 14 described species (including two species transferred here from *Aphilon* and excluding four transferred to a new genus). The genus was described by Sharp (1886) who included two very different species in his original paper. We designate *C. globosus* Sharp as the type species, the other, *Caccolmpus plagiatus* Sharp, is placed in a new genus below (*Maurodus*), together with *Caccolmpus cinctiger* Broun, *Caccolmpus maculatus* Broun, 1893, and *Caccolmpus ornatus* Broun, 1910. *Caccolmpus* also includes the species *Aphilon laticollis* and *A. pretiosum*, and apart from these two species transferred from *Aphilon*, the remaining species were described from the South Island, mostly from the highlands. Smaller *Caccolmpus* species that are similar to members of *Aphilon* can be distinguished from them by their small size, the head scarcely visible in dorsal view, and subcoxal lines on abdominal ventrite 1 which are not parallel to the metacoxal cavity that have a wide space and convex shape and often extend to the middle of the ventrite (Fig. 1F). The *Aphilon*-form of the subcoxal lines also occurs in *Caccolmpus cinctiger* Broun, *Caccolmpus maculatus* Broun, 1893, *Caccolmpus ornatus* Broun, 1910, and *Caccolmpus plagiatus* Sharp, and several additional species mainly from the South Island which can be characterised by having subcoxal lines on first abdominal ventrite parallel and approximate to metacoxal cavity: these we place in a new genus, *Maurodus*, below.



**FIGURES 1A–F.** Habitus and structures of *Aphilon* and *Cacomolpus*; A, *Aphilon* sp., dorsal view, length 2.2 mm; B, *Aphilon* sp., lateral view; C, *Cacomolpus* sp., dorsal view, length 2.7 mm; D, *Cacomolpus* sp., lateral view; E., *Aphilon* sp., front of head; F, *Cacomolpus* sp., abdominal ventrites.

All species live at ground level and can be sifted from leaf litter or moss, though some specimens have been collected at night from foliage above ground.

We are unable to provide a key to the species as the validity of the described species is unknown and unchecked.

**Included species.** *Cacomolpus amplus* Broun, 1921, *C. flectipes* Broun, 1914, *C. fuscicornis* Broun, 1917, *C. globosus* Sharp, 1886, *C. hallianus* Broun, 1917, *C. laticollis* (Broun, 1893), **comb. nov.** (from *Aphilon*), *C. montanus* Broun, 1921, *C. nigristeris* Broun, 1917, *C. pretiosus* (Broun, 1880), **comb. nov.** (from *Aphilon*), *C. pullatus* Broun, 1893, *C. subcupreus* Broun, 1921, *C. substriatus* Broun, 1917, *C. tibialis* Broun, 1917, *C. viridescens* Broun, 1917.

**Distribution.** North Island, South Island, Stewart Island.

### ***Cacomolpus amplus* Broun, 1921**

*Cacomolpus amplus* Broun, 1921a:590. Type locality: Glenhope.

**Comment.** Broun based this species on one specimen lacking a leg and some terminal antennomeres that we located in the BMNH.

**Type examined.** Holotype (BMNH): re-mounted on point, female terminalia mounted separately on acetate card [left and right terminal antennomeres and right mid-leg missing], “4151. ♀. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Glenhope. 3.3.1915. [in Broun’s hand] // *Cacomolpus amplus*. ♀. [in Broun’s hand] // *Cacomolpus subcupreus* (= *amplus*) nov. syn. [handwritten] det. M. Daccordi [printed] 1982 [in Daccordi’s hand]”.

### ***Cacomolpus flectipes* Broun, 1914**

*Cacomolpus flectipes* Broun, 1914:259. Type locality: Mt Hutt, near Methven.

**Comment.** Broun based this species on one specimen that we located in the BMNH.

**Type examined.** Holotype (BMNH): re-mounted on card with aedeagus extracted and mounted at front edge of card [tarsi of right mid-leg missing], “3667. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Mount Hutt. 30.3.1912. [in Broun’s hand] // *Cacomolpus flectipes*. [in Broun’s hand] // *Cacomolpus flectipes* Broun [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi’s hand]”.

### ***Cacomolpus fuscicornis* Broun, 1917**

*Cacomolpus fuscicornis* Broun, 1917:466. Type locality: Mount Dick.

**Comment.** Broun based this species on one female specimen that we located in the BMNH.

**Type examined.** Holotype (BMNH): re-mounted on point, female terminalia mounted separately on acetate card [left (A2–11) and right antennomere (A8–11) missing], “2965. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Mt Dick. 15.3.1914. [in Broun’s hand] // *Cacomolpus fuscicornis*. ♀. [in Broun’s hand] // *Cacomolpus pullatus* (= *C. fuscicornis*) nov. syn. [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi’s hand]”.

### ***Cacomolpus globosus* Sharp, 1886**

*Cacomolpus globosus* Sharp, 1886:447. Type locality: Greymouth.

**Comments.** Sharp did not give the number of specimens he had available for this species. There were five speci-

mens in the main BMNH collection, three of which clearly bore the original thick card labels that Sharp had used (one specimen was labelled as type). Two additional specimens with Edmund Reitter labels are assumed to be from the same shipment that Sharp received from Reitter via Helms (Greymouth), named in Sharp's 1886 paper. We have restricted the syntypes to the three specimens with Sharp labels, one of which, labelled 'type' by a curator, is designated lectotype to stabilise the epithet.

**Type material examined.** Lectotype (BMNH): remounted on card with removed abdomen, with right maxilla and female terminalia on acetate card, "Cacomolpus globus Type M. S. Greymouth, N. Z. [in Sharp's hand; top of original card trimmed] // ♀ [in Sharp's hand?; top of original card trimmed] // Type H.T. [round label with red border] // Sharp Coll. 1905-313. // Cacomolpus globosus Sharp [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi's hand]". Paralectotypes (BMNH): 1, same, but remounted on point, with right maxilla and female terminalia on acetate card, "Greymouth [in Sharp's hand; original card trimmed]"; 1, same, but remounted on point with aedeagus removed and mounted on side of label, "♂ Cacomolpus globus M. S. Greymouth, Helms [in Sharp's hand; original card trimmed] // II 23 [in Reitter's hand?]".

### ***Cacomolpus hallianus* Broun, 1917**

*Cacomolpus hallianus* Broun, 1917:466. Type locality: Mount Dick.

**Comments.** Broun based this species on four specimens collected from Mount Dick (Lake Wakatipu), one a female collected on 29 January 1914, and "three others" collected on the same mountain for "two days" in March by T. Hall. There were four specimens in the Broun collection (BMNH), two collected from 29 January 1914 and two collected on 13 March 1914. There were two additional specimens in the NZAC on 13 March 1914 collected from Mt Dick and labelled as syntypes by Robin Craw, and an additional four specimens labelled as "var. 3964" by Broun, two of which lacked locality information, and two from Ben Lomond. Unfortunately, Broun may have confused dates and localities, or there was mislabelling by Broun, or label switching in the Broun material because two male specimens in the BMNH were labelled as "var. 3966" a number corresponding to *C. substriatus* described from Ben Lomond (Dunedin) but had the Mt Dick locality labels and were collected in March. Note that these species, and others, are considered synonymous by M. Daccordi (pers. obs.) with *C. pullatus*. We decided to treat two BMNH specimens collected in January 1914 as syntypes, and designate the male as the lectotype and the female a paralectotype.

**Type material examined.** Lectotype (BMNH): re-mounted on card with removed aedeagus mounted at corner [left antenna, right antennomeres A7–11, left protibia, left hindleg, right protarsomeres 4 and 5, most of the right tibia, and hind tarsus missing], "3964. ♂. [in Broun's hand] // Mount Dick. 29.1.1914. [in Broun's hand] // Cacomolpus hallianus. [in Broun's hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Cacomolpus pullatus (= *C. hallianus*) nov. syn. [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi's hand]". Paralectotype (BMNH): re-mounted on point, female terminalia and abdomen cleared and in window-mount [left antennomeres A2–11 missing], "3964. ♀. [in Broun's hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Mount Dick. 29.1.1914. [in Broun's hand] // Cacomolpus pullatus (= *C. hallianus*) nov. syn. [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi's hand]".

### ***Cacomolpus laticollis* (Broun, 1893), comb. nov.**

*Aphilon laticollis* Broun, 1893a: 392. Type locality: Thames.

**Comments.** Broun based the description of this species on a single specimen which we located in the BMNH and confirmed as the holotype. He did not mention the sex nor did he include his typical numbered species. This species is transferred to *Cacomolpus* because of the form of the subcoxal lines on abdominal ventrite 1 which are convex and form a broad axillary space. This species is considered a synonym of *Cacomolpus globosus* by M. Daccordi (pers. obs.), but a full revision of the species is needed before formal synonymy is actioned.

**Type examined.** Holotype (BMNH): re-pointed with cleared abdomen and female terminalia in media on separate acetate card [right mid-tarsus and right hindleg missing], "3015. [in Broun's hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Thames // ♀ [in Broun's hand] // *Aphilon laticollis* [in Broun's hand]"



// *Cacomolpus globosus* (= *Aphilon laticollis* Broun) nov. syn. [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi's hand]".

### ***Cacomolpus montanus* Broun, 1921**

*Cacomolpus montanus* Broun, 1921b:665. Type locality: Mount St Arnaud, Nelson.

**Comments.** Broun based this species on four specimens, two of each sex, of which three were in the BMNH and one was in the NZAC. One of these was designated as the lectotype to stabilise the epithet, the remaining three were designated as paralectotypes.

**Type material examined.** Lectotype (BMNH): remounted on card with removed aedeagus glued at corner, "4254. ♂. [in Broun's hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // M<sup>t</sup> Arnaud. 15.6.1916. [in Broun's hand] // *Cacomolpus montanus*. ♂ [in Broun's hand] // *Cacomolpus subcupreus* (= *montanus*) nov. syn. [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi's hand]". Paralectotypes: 1 (BMNH), same, but re-mounted on point with egg (?), female terminalia and abdomen mounted separately on acetate label, "4254. ♀. [in Broun's hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // M<sup>t</sup> Arnaud. 15.6.1916. [in Broun's hand] // *Cacomolpus montanus*. ♀ [in Broun's hand]"; 1 (BMNH), same as lectotype but remounted on card and aedeagus separately mounted on point; 1 (NZAC), body and one leg remounted on card and female terminalia and one leg mounted on acetate label, "M<sup>t</sup> Arnaud. 15.6.1916. // *Cacomolpus montanus*. ♀ [in Broun's hand] // A. E. Brookes Collection // T. Broun Collection // SYNTYPE [printed] *Cacomolpus montanus* Broun, 1921 R. C. Craw det. 1983 [in Craw's hand on acid green label]".

### ***Cacomolpus nigristernis* Broun, 1917**

*Cacomolpus nigristernis* Broun, 1917:465. Type locality: Hollyford.

**Comments.** Broun based this species on one specimen which was in the NZAC. There was one specimen in the BMNH which matches the date and locality published by Broun, but was labelled as a variant and, moreover, Broun made no mention of a variant in the original publication. We confirm that the NZAC specimen is the holotype.

**Type examined.** Holotype (NZAC): Hollyford. 19.2.1914. [in Broun's hand] // 3936. // T. Broun Collection // A. E. Brookes Collection // *Cacomolpus nigristernis*. ♂. [in Broun's hand] // HOLOTYPE [printed] *Cacomolpus nigristernis* Broun, 1917 R. Craw det. 1983 [in Craw's hand on cosmic orange label]".

### ***Cacomolpus pretiosus* (Broun, 1880), comb. nov.**

*Aphilon pretiosum* Broun, 1880: 630. Type locality: Tairua.

**Comments.** Broun based this species on two specimens, one of which was in the BMNH and is designated as the lectotype to stabilise the epithet. This species is transferred to *Cacomolpus* because of the form of the subcoxal lines on abdominal ventrite 1 which are convex and form a broad axillary space. This species is considered a synonym of *Cacomolpus globosus* by M. Daccordi (pers. obs.), but a full revision of the species is needed before formal synonymy is actioned.

**Type examined.** Lectotype (BMNH): re-mounted on point with female terminalia mounted separately on acetate card, "1105 [olive green label] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Tairua // *Aphilon pretiosum*. [in Broun's hand] // *Cacomolpus globosus* (= *Aphilon pretiosum* Broun) nov. syn. [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi's hand]".

### ***Cacomolpus pullatus* Broun, 1893**

*Cacomolpus pullatus* Broun, 1893b:1309. Type locality: Forty-Mile Bush [Napier].

**Comments.** Broun did not mention the number of specimens he examined. We located two specimens in the BMNH, one of which we designated as the lectotype to stabilise the epithet.

**Type examined.** Lectotype (BMNH): remounted on card with removed aedeagus glued at corner, “2299. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Napier // *Cacomolpus pullatus*. [in Broun’s hand] // *Cacomolpus pullatus* Broun [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi’s hand]”. Paralectotype (BMNH): 1, same, but re-mounted on point with abdomen and right mid-leg also on card and female terminalia mounted separately on acetate label, Broun identification label lacking.

### ***Cacomolpus subcupreus* Broun, 1921**

*Cacomolpus subcupreus* Broun, 1921a:589. Type locality: Glenhope.

**Comment.** Broun based this species on one specimen that we located in the BMNH.

**Type examined.** Holotype (BMNH): re-mounted on card, aedeagus mounted at corner, “4150. ♂. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Glenhope. 8.6.1915. [in Broun’s hand] // *Cacomolpus subcupreus*. ♂. [in Broun’s hand] // *Cacomolpus subcupreus* Broun [handwritten] det. M. Daccordi [printed] 1982 [in Daccordi’s hand]”.

### ***Cacomolpus substriatus* Broun, 1917**

*Cacomolpus substriatus* Broun, 1917:467. Type locality: Ben Lomond.

**Comments.** Broun based this species on three specimens collected from Mount Dick on 6 March 1914 by Mr. Hall, one of which was a mutilated male mounted dorsally. We located four specimens with handwritten locality and Broun numbers in the BMNH and NZAC, one of which was labelled as a variety, and three that were remounted and redetermined as *C. pullatus* by M. Daccordi. There is some confusion about true specimen identities due to labelling (see above, *C. hallianus*) and all could be regarded as syntypes. We decided to exclude the variant, and treat the three remaining specimens as syntypical.

**Type material examined.** Lectotype (BMNH): remounted on point, aedeagus glued laterally and abdomen cleared and in window-mount [right proleg missing], “3966. ♂. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Lomond. 6.3.14. [in Broun’s hand] // *Cacomolpus pullatus* (= *C. substriatus*) nov. syn. [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi’s hand]”. Paralectotypes (NZAC): 1, remounted on a point, aedeagus glued laterally [right antenna and proleg missing], “Lomond. 6.3.14. [in Broun’s hand] // 3966. [in Broun’s hand] // T. Broun Collection // A. E. Brookes Collection // SYNTYPE [printed] *Cacomolpus substriatus* Broun, 1917 R. Craw det. 1983 [in Craw’s hand on acid green label]”; 1, remounted with abdomen on a point, female terminalia mounted on acetate card [left antennomeres 10 and 11 and left middle and hind legs missing], “Lomond. 6.3.14. [in Broun’s hand] // *Cacomolpus substriatus* [in Broun’s hand] // T. Broun Collection // A. E. Brookes Collection // Type series E. S. G. 1989 [in Gourley’s hand on red label] // SYNTYPE [printed] *Cacomolpus substriatus* Broun, 1917 R. Craw det. 1983 [in Craw’s hand on acid green label] // *Cacomolpus pullatus* (= *C. substriatus*) nov. syn. [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi’s hand]”.

### ***Cacomolpus tibialis* Broun, 1917**

*Cacomolpus tibialis* Broun, 1917:467. Type locality: Mount Dick.

**Comment.** Broun based this species on one specimen collected from Mount Dick.

**Type examined.** Holotype (BMNH): re-mounted on card, aedeagus glued to corner, “3967. ♂. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Mount Dick. 13.3.1914. [in Broun’s hand] // *Cacomolpus tibialis*. ♂. [in Broun’s hand] // *Cacomolpus pullatus* (= *C. tibialis*) nov. syn. [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi’s hand]”.

## *Cacomolpus viridescens* Broun, 1917

*Cacomolpus tibialis* Broun, 1917:468. Type locality: Dyer's Pass, Christchurch.

**Comment.** Broun based this species on one specimen collected from Dyer's Pass.

**Type examined.** Holotype (BMNH): re-mounted on point, extracted female terminalia mounted on acetate card [left antennomeres 5–11 and right antennomeres 3–11 missing], “3968. ♂. [in Broun's hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Dyer's Pass. 23.8.1914. [in Broun's hand] // *Cacomolpus viridescens* [in Broun's hand] // *Cacomolpus flectipes* (= *C. viridescens*) nov. syn. [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi's hand]”.

## *Chalcolampra* Blanchard, 1853

(Figs 2, 3, 18D, E)

*Chalcolampra* Blanchard, 1853: 328. Type species: *Chalcolampra convexa* Blanchard, 1853, by monotypy.

*Allocharis* Sharp, 1882: 98. Type species: *Allocharis marginata* Sharp, 1882, by monotypy. Synonymy by Daccordi, 1994:77 [as a subgenus].

*Cyrtonogetus* Broun, 1915: 343. Type species: *Cyrtonogetus crassus* Broun, 1915, by monotypy. **Syn. nov.**

*Eualema* Broun, 1903: 86. Type species: *Eualema walkeri* Broun, 1903: 86, by monotypy. Synonymy by Broun 1910: 77 [nec Daccordi, 1994:77; as a subgenus].

**Diagnosis (NZ species only).** Body length greater than 3.0 mm and up to about 8.0 mm; elongate and moderately convex; colour uni- or bicoloured dark sometimes with a blue or green metallic luster. Antennae filiform. Procoxal cavities externally closed to very narrowly open. Hindwings present, absent, or reduced. Anterior edge of metaventrite curved to rounded or subrounded; metaventral lines parallel and not extending to middle of ventrite. First abdominal ventrite with subcoxal bead parallel to metacoxal cavity and not extending to middle of ventrite.

**Description.** Length 3.7–8.1 mm. Body broad and elongate, moderately convex; colour variable, generally uni- or bicoloured dark, sometimes with a blue or green metallic luster.

Head not forming a short muzzle, with genae extending a short distance beyond level of antennal and maxillary insertions, visible in dorsal view and retracted into prothorax with mouthparts directed anteroventrally; wide vertex or frons, nearly flat to feebly convex; postantennal calli present to weakly developed, but lacking pale areas. Eyes relatively well-developed, weakly or not protuberant, finely faceted and consisting of over 50 ommatidia; inner margin of eye without a small seta. Antennae long and filiform and reaching beyond hind margin of the pronotum, scape long and about 2 times longer than antennomere 2, club not well-developed; eye not contacting insertion, with distance between insertion and margin of eye less equal or less than diameter of insertion, distance between insertions about 2–5 times length of the scape. Clypeus somewhat trapezoidal to semicircular, anterior margin straight; frontoclypeal suture present; postclypeal lines present or absent. Labrum with curved sides and somewhat rectangular and typically transverse to semicircular, anterior margin emarginated or not, surface with 2–3 elongate setae per side, anterior margin at middle lacking distinct setal fringe, tormae long and thin, about 2–4 times longer than labral plate. Mandible with terebral edge simple. Maxillary palpus relatively long, palpomere 1 longer than wide, palpomere 2 not transverse and longer than wide, palpomere 3 about 2 times longer than wide or short to about as long as wide, greater to less than the length of palpomere 2, conical to cylindrical and often truncate to weakly acute (e.g., *Chalcolampra speculifera*). Labium with relatively wide ligula, subequal in width to the lengths of palpomeres 1 and 2 combined, apex not divided at apex, palpal insertions separated by more than the width of the basal palpomere, palpi relatively short, palpomere 1 as wide as long, palpomere 2 longer as wide, palpomere 3 2–3 times longer than wide, conical to cylindrical. Mentum rectangular and transverse, width of mentum slightly longer or equal the length of labial palpomere 3. Intermaxillary process short and not extending anteriorly far beyond maxillary insertions, delimited behind by a ridge or a bead.

Pronotum transverse and convex to flattened, with a bead along all margins, or weakly indicated or absent posteriorly; posterior edge narrower than base of elytra; anterior margin emarginate and evenly concave, anterior angles weakly to strongly projecting, rounded to subacute; sides nearly parallel in basal half, curved, or sinuate, not strongly convergent anteriorly; posterior margin weakly convex or sinuate; posterior angles acute to subacute; disc moderately convex without sublateral groove, trichobothria present, coarse and dense punctures at middle of



posterior margin absent; lateral carinae complete. Prosternum not or weakly vaulted at middle, without transverse notches in front of coxal cavities; prosternal lines absent (bead at inner margin of the procoxal cavities is present, but does not extend forward much beyond edge of coxa); prosternal process broad, short and extending a short distance behind procoxae, expanded laterally behind coxae and usually contacting an acute and elongate hypomerall process (sometimes a small gap is present); posterior margin straight, weakly convex or emarginated; procoxal cavities externally closed (or very narrowly opened). Notopleural suture distinct. Scutellary shield visible, triangular and somewhat transverse with rounded or acute apex. Elytra moderately convex, humeral calli distinct or absent, mid-basal striae present or absent; surface smooth and punctation striate, moderately coarse and dense to fine and sparse; epipleura well developed, visible in lateral view, apex without ctenidium. Hind wings absent or brachypterous. Mesoventrite mostly hidden in ventral view, posterior portion between mesocoxae visible as a narrow strip; mesal part of mesoventrite with vertical surface confluent with prepectus. Meso- and metacoxae moderately to widely separated. Metaventrite typically shorter than abdominal ventrite 1 at midline (rarely longer, e.g., *C. speculifera*), mesocoxal process broad to somewhat narrow with a straight, curved, or subrounded anterior margin, metaventral lines parallel and not extended to middle of ventrite, transverse metaventral (metakatepisternal) suture present but typically does not cross the midline. Metendosternite without or with a broad stalk (present in *C. speculifera*) and laminae absent, widely spaced lateral arms with subapical anterior tendons. Legs with tibiae flattened to subrounded in cross section, meso- and metatibiae not clubbed with lateral edge curved and not irregular in outline, apically setose; tarsomeres 5-5-5 and variable, tarsomere 1 typically longer than T2, 1.5 times longer than wide parallel-sided or triangular, T2 triangular and may be wider than long and narrower and smaller than T3, T3 about as wide as long or longer and not deeply incised (bilobed), tarsomere 4 minute, T5 about 2–2.5 times as long as T3, appendiculate, weakly appendiculate, or simple; tarsomere 1 of male not greatly enlarged (but all tarsomeres may be, in general, enlarged).

Abdominal ventrite 1 variable in length but typically longer than ventrite 2 and 3 combined and always shorter than ventrites 2–5 combined, with a broad metacoxal process that is wider than long and with a weakly curved apical margin, ventrites 2–4 equal in length and each shorter than ventrite 1, ventrite 5 subequal to ventrite 4 or longer ventrites 3 and 4 combined with rounded or subrounded posterior margin; first abdominal ventrite with subcoxal lines parallel to coxal cavity that do not extend to middle of ventrite. Aedeagus variable, curved to weakly curved in lateral view and rounded, laterally or dorsoventrally compressed in cross section; apex in dorsal view acute to rounded or square-edged, may be expanded towards apex; flagellum present or absent. Ovipositor with paraproct 2 times longer than wide and lacking distinct baculus, coxite about 3 times longer than wide, stylus apically inserted and about 1.2 times the length of coxite. Spermatheca U-shaped, collum present spermathecal duct inserted onto base, spermathecal gland absent or very weakly sclerotised.

**Comments.** The species of *Chalcolampra* are widely distributed in Southeast Asia, Australia and New Zealand (Reid 1993, 2006). There are 13 described species in New Zealand, and there are up to an additional 20 undescribed spp. from the South Island based on morphospecies sorted by Charles Watt contained in the NZAC. The first description of a New Zealand species was of *Chalcolampra speculifera* Sharp, 1882 (Fig. 2C), a species also described by Broun (1903) and placed in his new genus *Eualema*, but subsequently synonymised with *Chalcolampra* (Broun 1910). Meanwhile, Sharp (1882) named a new monotypic genus, *Allocharis*, based on *A. marginata* that he thought was closely related to the tribe Phyllocarites and was intermediate between *Cyrtonus* Latrielle and *Gonioctena* (without mentioning similarities to *Chalcolampra*). Subsequently, Broun added 11 species to *Allocharis* and then erected a new monotypic genus, *Cyrtonogetus* Broun, 1915 (Fig. 3B). *Allocharis* was treated as a valid genus and the combination *Chalcolampra speculifera* presented in Withers *et al* (2015). *Cyrtonogetus* was retained as a separate genus by Daccordi (1994, see also 1996), and indeed there are differences between this species and other members of the group, as expressed by Broun (1915: 343): “The type of this genus is nearly related to *Allocharis* (Man. N.Z. Coleopt., p. 1306), but the body is not at all elongate-oval, being robust and oblong. The metasternum has the front margin distinctly elevated and truncate between the coxae, instead of being strongly, almost sharply rounded. The basal ventral segment is hardly as long as the following three, and its frontal suture is nearly quite straight. The posterior coxae are only a little farther apart than the intermediate. Tibiae gradually incrassate towards the extremity, each with a broad external groove there. Tarsi stout, basal two joints cordiform, 3rd entire and densely setose underneath, slightly emarginate, the claws of the terminal appendiculate at the base. In sternal structure it is similar to *Caccamolpus*, which, however, is composed of small subrotundate species with differently formed legs.” Maddison (2010) followed Daccordi’s classification, with *Allocharis* and *Eualema* listed as subgenera of *Chalcolampra*.

Reid & Smith (2004) treated the three New Zealand taxa *Allocharis*, *Cyrtonogetus*, and *Eualema* as valid and possibly the sister group to the New Caledonian endemic genus *Zira* Reid & Smith 2004, but noted that the similarities were likely to be plesiomorphies within a larger group of taxa. The New Zealand and New Caledonian taxa share many similarities with *Chalcolampra* and are part of a larger taxonomic problem involving several genera. In New Zealand, these species form a morphological grade of completely winged forms to apterous forms that make up the bulk of species. A relatively robust and convex body with non-protuberant eyes characterises *Cyrtonogetus* and some *Allocharis* (e.g., *A. subsulcata* Broun). The main difference between *C. speculifera* and most species of *Allocharis* is the posteriorly expanded and abruptly truncate elytra (Fig. 2C), but this feature is present, to a lesser degree, in some *Allocharis* species. The external closure of the procoxal cavities (Fig. 3E) varies from complete to narrowly open (see also Reid 1993, 2006). We believe it prudent to place the three New Zealand genera in *Chalcolampra*, treating *Cyrtonogetus* as a synonym. We also advocate dispensing with subgenera altogether until a broader study of the group is undertaken. Because of the difficulty in determining species we are unable to provide a key to the species.

The problem with *Chalcolampra* is broader than the New Zealand issue, and the genus may not be monophyletic. Reid (2006) suggested that *Phyllocharis* Dalman and *Chalcolampra* might be placed in synonymy, though larval characters may support their separation (Reid 1991): this may be true in New Zealand when comparing larval forms (*C. Wardhaugh*, pers. obs); one form with a well sclerotised circular plate at the apex of the abdomen and others lacking this structure. Meanwhile, no adult synapomorphies have been recognised for *Chalcolampra*, and the genus appears twice in a key to Australian chrysomelinae by Reid (2006) based on differences of the tarsal claw (Reid 1993). Furthermore, unpublished genetic data support non-monophyly of the genus (*J. Jurado*, pers. com., 2009). The likelihood that the New Zealand species of *Chalcolampra* are paraphyletic, or of multiple origins, is indicated by two distinct larval morphologies. Clearly a complete overhaul of the genera of this group is required.

All New Zealand forms have a more or less parallel-sided body form, are relatively large (over 4 mm), have eyes that are well-developed (though they may or may not be protruding), and the antennae on the larger forms are filiform to subfiliform, lacking a club or have broadened apical antennomeres, which distinguishes the genus from other native New Zealand taxa. Host records are few for New Zealand *Chalcolampra*. Species in Australia feed on *Senecio* (Asteraceae), *Prostanthera* (Lamiaceae) and *Veronica* (Scrophulariaceae) (Reid 1991, 2006; Holtkamp & Hosking 1993). Members of Australian *Chalcolampra* s. str. feed mainly on Asteraceae and Pittosporaceae (*Jurado-Rivera et al.* 2009) and the New Zealand species *C. speculifera* has been collected from *Pseudopanax* (Araliaceae), which is also the host for species of *Promechus* Boisduval, the only other chrysomelinae known to feed on Araliaceae (*Jolivet & Hawkeswood* 1995), a rare host for any chrysomelid (Reid & Beatson 2018). The larva of one species of *Chalcolampra*, similar to *C. speculifera*, has been observed feeding on the composite *Olearia colensoi* (*Wardle et al.* 1971) and was illustrated by Reid (1995). It blocks its daytime retreats with an anal plate formed by terga VII–IX. Other New Zealand *Chalcolampra* feed on *Veronica* (Scrophulariaceae). A species like *C. tarsalis* Broun has been collected from the subalpine species *V. albicans* in Northwest Nelson, where the larva feeds on leaves day and night, though adults are nocturnal (*C. Wardhaugh*, pers. com., 2018). Larvae of this group lack the anal plate and have been recorded previously from *Veronica* (*Purdie* 1884; as *Allocharis marginata* Sharp) and were illustrated and briefly described by *Hudson* (1934; as *Allocharis robusta* Broun). Lastly, two species similar to *C. crassus* have been collected from *Celmisia brevifolia*, *C. haasti* and under *Celmisia* leaves (Asteraceae).

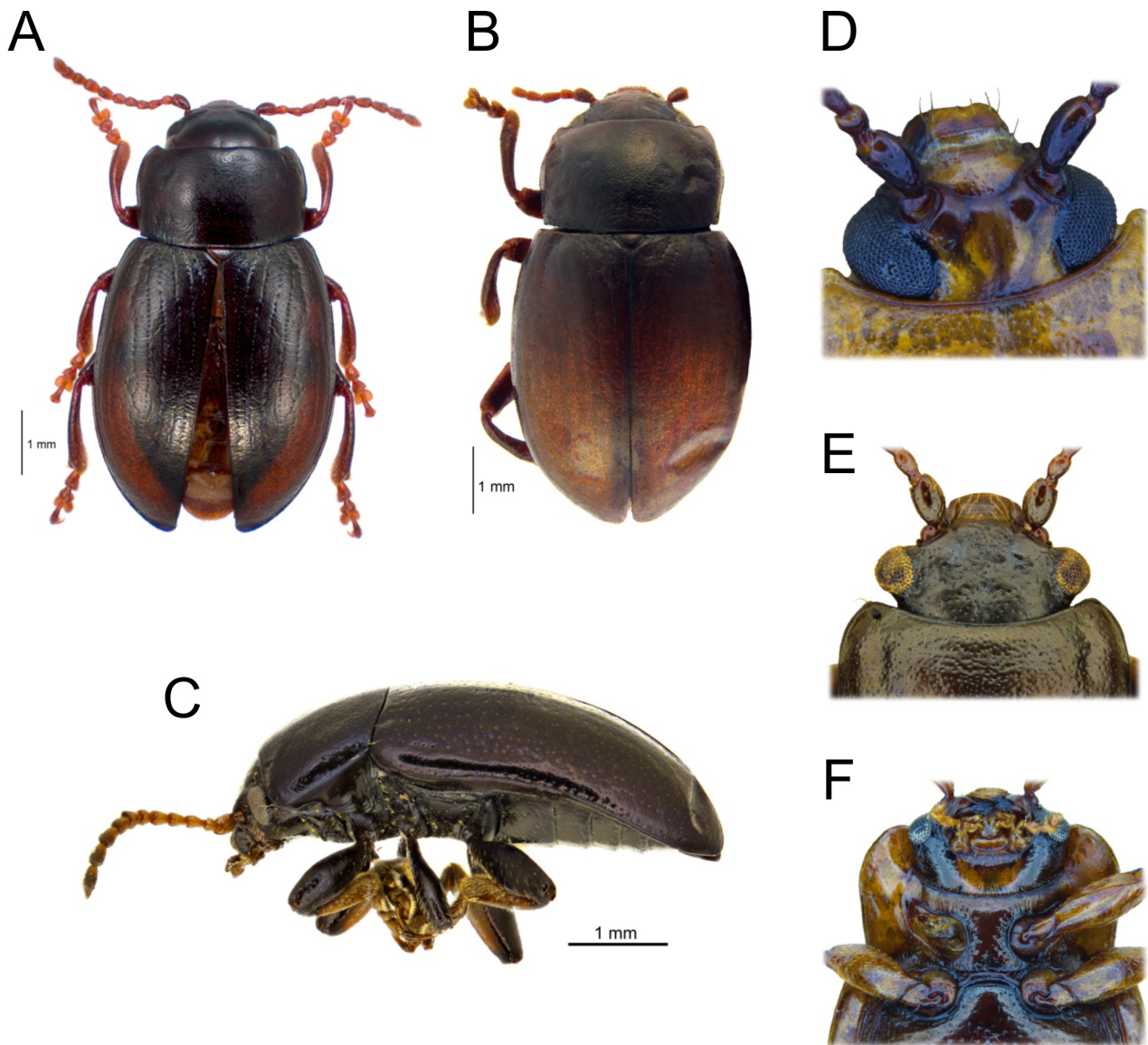
**Distribution.** South Island.

**Included species.** *Chalcolampra crassa* (Broun, 1915), **comb. nov.** (from *Cyrtonogetus*), *C. fuscipes* (Broun, 1917), *C. limbata* (Broun, 1893), *C. marginata* (Sharp, 1882), *C. media* (Broun, 1917), *C. morosa* (Broun, 1893), *C. nigricollis* (Broun, 1917), *C. picticornis* (Broun, 1917), *C. praestans* (Broun, 1917), *C. robusta* (Broun, 1917), *C. speculifera* Sharp, 1882 (= *Eualema walkeri* Broun, 1903, **syn. nov.**), *C. subsulcata* (Broun, 1917), *C. tarsalis* (Broun, 1917).



**FIGURES 2A–M.** Dorsal habitus of *Chalcolampra* spp.; A, *Chalcolampra* sp.; B, *Chalcolampra* sp., length 4.8 mm; C, *Chalcolampra speculifera* Sharp, length 8.7 mm; D, *Chalcolampra* sp.





**FIGURES 3A–F.** Habits and structures of *Chalcolampra* spp.; A, *Chalcolampra* sp., dorsal habitus; B, *Chalcolampra crassa* (Broun), dorsal habitus of holotype; C, *Chalcolampra* sp., lateral view, length; D, *Chalcolampra speculifera* Sharp, detail of head; E *Chalcolampra* sp., detail of head; F, *Chalcolampra* sp., ventral view of anterior portion of body.

***Chalcolampra crassa* (Broun, 1915), comb. nov.**  
(Fig. 3B)

*Cyrtonogetus crassus* Broun, 1915:343. Type locality: The Remarkables.

**Comment.** Broun based this species on one specimen that we located in BMNH in poor condition.

**Type examined.** Holotype (BMNH): re-mounted on point with left antenna and right proleg, original three labels mounted on top of newer cardstock, cleared abdomen in genitalia vial [left antennomeres 6–11, left protarsomeres 4 and 5, left mid and hindtarsi, and genitalia missing], “3778. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Remarkables. 28.12.1912. [in Broun’s hand] // Holo-type [round label with red border] // Holotypus [red label] // *Cyrtonogetus crassus*. [in Broun’s hand] // *Cyrtonogetus crassus* Broun Daccordi—Shute rev. 1988 [in Shute’s hand]”.

### ***Chalcolampra fuscipes* (Broun, 1917)**

*Allocharis fuscipes* Broun, 1917: 464. Type locality: Moa Basin.

*Chalcolampra fuscipes*: Implied combination based on *Allocharis* as an objective synonym of *Chalcolampra* in Daccordi, 1994: 77.

**Comment.** Broun based the description on a single specimen.

**Type examined.** Holotype (BMNH): card-mounted, “3960. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Moa Basin. 20.10.1913. [in Broun’s hand] // *Allocharis fuscipes* [in Broun’s hand]”.

### ***Chalcolampra limbata* (Broun, 1893)**

*Allocharis limbata* Broun, 1893b: 1307. Type locality: Flagstaff Hill and Mount Maungatua, Dunedin.

*Chalcolampra limbata*: Implied combination based on *Allocharis* as an objective synonym of *Chalcolampra* in Daccordi, 1994: 77.

**Comments.** Broun indicated that one specimen was from Flagstaff Hill and “the others” were from Mount Maungatua. In the Broun collection (BMNH) we found one from Flagstaff Hill and three others collected from Taieri where Mount Maungatu is located. One of these we designated as the lectotype to stabilise the epithet, and the remainder were designated as paralectotypes.

**Type material examined.** Lectotype (BMNH): card-mounted, “2296. [in Broun’s hand] // ♂ [in Broun’s hand] // Taieri // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Gordon’s. 15.11.1914 [in Broun’s hand] // *Allocharis limbata* [in Broun’s hand]”. Paralectotypes (BMNH): 2, same as lectotype (one labelled as “♂”); 1, same, but “Flagstaff Hill. [in Broun’s hand] // Dunedin” [lacking identification label].

### ***Chalcolampra marginata* (Sharp, 1882)**

*Allocharis marginata* Sharp, 1882:99. Type locality: Craigieburn.

*Chalcolampra marginata*: Implied combination based on *Allocharis* as an objective synonym of *Chalcolampra* in Daccordi, 1994: 77.

**Comment.** Sharp based the description of this species on a single specimen.

**Type examined.** Holotype (BMNH): pointed on abdomen with antennae removed and glued on card and cleared abdomen and the female terminalia in window-mount [some antennal segments and right protarsi missing], “*Allocharis marginata* Type M. S. Craigieburn, NZ<sup>d</sup>. [in Sharp’s hand; top of original card trimmed] // Type H.T. [round label with red border] // Sharp Coll. 1905-313. // *Chalcolampra* (*Allocharis*) *marginata* Sharp [handwritten] Daccordi det. [printed] 1997 [in Daccordi’s hand]”.

### ***Chalcolampra media* (Broun, 1917)**

*Allocharis media* Broun, 1917:463. Type locality: Ben Lomond.

*Chalcolampra media*: Implied combination based on *Allocharis* as an objective synonym of *Chalcolampra* in Daccordi, 1994: 77.

**Comment.** Broun based the description on a single specimen.

**Type examined.** Holotype (BMNH): card-mounted, “3959. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Lomond. 5.3.1914. [in Broun’s hand] // *Allocharis media*. [in Broun’s hand]”.

### ***Chalcolampra morosa* (Broun, 1893)**

*Allocharis morosa* Broun, 1893b:1307. Type locality: Castle Hill.

*Chalcolampra morosa*: Implied combination based on *Allocharis* as an objective synonym of *Chalcolampra* in Daccordi, 1994: 77.

**Comment.** Broun based the description on a single specimen.

**Type examined.** Holotype (BMNH): pointed, “2295. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Castle Hill // CANTERB // *Allocharis morosa*. [in Broun’s hand]”.

### ***Chalcolampra nigricollis* (Broun, 1917)**

*Allocharis nigricollis* Broun, 1917:463. Type locality: Ben Lomond and Mount Dick.

*Chalcolampra nigricollis*: Implied combination based on *Allocharis* as an objective synonym of *Chalcolampra* in Daccordi, 1994: 77.

**Comments.** Broun based this name on three specimens from Ben Lomond and one from Mount Dick, three of which were in the BMNH and one located in the NZAC. The specimen from Mount Dick was designated as the lectotype to stabilise the epithet, and the remaining specimens were designated as paralectotypes.

**Type material examined.** Lectotype (BMNH): pointed on abdomen with cleared abdomen and aedeagus mounted at base and antenna and mouthparts in window-mount, “3957 [in Broun’s hand] // Mount Dick. 24.1.1914. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482.” Paralectotypes: 2 (BMNH), same but 1 mounted dorsally on card and 1 pointed on abdomen with cleared abdomen and female terminalia in window-mount, “3957. [in Broun’s hand] // Lomond. 5.3.1914. [in Broun’s hand] // *Allocharis nigricollis*. [in Broun’s hand]”; 1 (NZAC), Lomond. 5.3.1914. [in Broun’s hand] // // *Allocharis nigricollis*. [in Broun’s hand] // 3957. [in Broun’s hand] // A. E. Brookes Collection // T. Broun Collection // SYNTYPE [printed] *Allocharis nigricollis* Broun, 1917 R. C. Craw det. 1983 [in Craw’s hand on acid green label]”.

### ***Chalcolampra picticornis* Broun, 1917**

*Allocharis picticornis* Broun, 1917:463. Type locality: Ben Lomond. Type depository: BMNH HT.

*Chalcolampra picticornis*: Implied combination based on *Allocharis* as an objective synonym of *Chalcolampra* in Daccordi, 1994: 77.

**Comment.** Broun based the description on a single specimen.

**Type material examined.** Holotype (BMNH): card-mounted, “3958. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Lomond. 5.3.1914. [in Broun’s hand] // *Allocharis picticornis*. [in Broun’s hand]”.

### ***Chalcolampra praestans* (Broun, 1917)**

*Allocharis praestans* Broun, 1917:462. Type locality: Moa Basin.

*Chalcolampra praestans*: Implied combination based on *Allocharis* as an objective synonym of *Chalcolampra* in Daccordi, 1994: 77.

**Comments.** Broun based this name on three specimens from Moa Basin collected on 20 October 1913, and mentioned a single specimen as a variety from Mistake Basin. We located one specimen in the NZAC that was designated as the lectotype to stabilise the epithet, another NZAC specimen collected on the same date from Scarcliff, and two specimens from Mistake Basin (BMNH), all of which are located in the same area surrounding Lake Coleridge: all of these we consider as syntypes.

**Type material examined.** Lectotype (NZAC): carded, “3955 [in Broun’s hand] // Moa Basin 20.10.1913. [in

Broun's hand] // *Allocharis praestans*. Broun [in Broun's hand] // SYNTYPE [printed] *Allocharis praestans* Broun, 1917 R. C. Craw det. 1983 [in Craw's hand on acid green label]". Paralectotypes: 1 (BMNH), pointed on abdomen with cleared abdomen and female terminalia in window-mount, "3955 [in Broun's hand] // Mistake. 9.10.1913. [in Broun's hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // *Allocharis praestans* Broun [handwritten] M. Daccordi det. [printed] 1988 [in Daccordi's hand]"; 1 (BMNH), same but "3955. [in Broun's hand] // *Allocharis praestans*. [in Broun's hand]"; 1 (NZAC), Scarcliff. 20.10.1913. [in Broun's hand] // T. Broun Collection // A. E. Brookes Collection".

### ***Chalcolampra robusta* (Broun, 1917)**

*Allocharis robusta* Broun, 1917:464. Type locality: Wakatipu.

*Chalcolampra robusta*: Implied combination based on *Allocharis* as an objective synonym of *Chalcolampra* in Daccordi, 1994: 77.

**Comments.** Broun based this name on two specimens, which were in the BMNH. One of these was designated as the lectotype to stabilise the epithet, and the other designated as a paralectotype.

**Type material examined.** Lectotype (BMNH): card-mounted, "3691 [in Broun's hand] // Wakatipu.—Purdie— [in Broun's hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // *Allocharis robusta*- [in Broun's hand]". Paralectotype (BMNH): 1, same.

### ***Chalcolampra speculifera* Sharp, 1882**

(Fig. 2C)

*Chalcolampra speculifera* Sharp, 1882:98. Type locality: Greymouth.

*Eualema walkeri* Broun, 1903:86. Synonymy by Broun 1910: 77. Type locality: Westport.

**Comments.** Sharp did not provide the number of specimens he examined for his species *C. speculifera*. Four specimens were in the main BMNH collection, and we decided that two of them, with original hard card used by Sharp, were syntypic. We designated one of these as the lectotype to stabilise the epithet, and the other was designated as a paralectotype. One specimen from Reitter's collection and another pointed were excluded from the syntype series. Broun did not record the number of specimens he examined for his species *E. walkeri* named after J.J. Walker from the H.M.S. "Ringarooma". One specimen in the BMNH was designated as the lectotype to stabilise the epithet.

**Type material examined.** *Chalcolampra speculifera* Sharp. Lectotype (BMNH): mounted on card, "Chalcolampra speculifera Type M. S. Greymouth, 1881 [in Sharp's hand] // Type H.T. [round label with red border] // Sharp Coll. 1905-313.". Paralectotype (BMNH): same, but, "Chalcolampra speculifera Ind. Typ. M. S. Greymouth, N.Z.<sup>d</sup> Helms [in Sharp's hand]". *Eualema walkeri* Broun. Lectotype (BMNH): card-mounted [left protarsomeres 2–5 missing], "3014. [in Broun's hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Westport 1902—[in Broun's hand] // *Eualema walkeri*. [in Broun's hand]".

### ***Chalcolampra subsulcata* (Broun, 1917)**

*Allocharis subsulcata* Broun, 1917:462. Type locality: Old Man Range, Otago.

*Chalcolampra subsulcata*: Implied combination based on *Allocharis* as an objective synonym of *Chalcolampra* in Daccordi, 1994: 77.

**Comments.** Broun based this name on two specimens, which were located in the BMNH. One of these was designated as the lectotype to stabilise the epithet, and the other designated as a paralectotype.

**Type material examined.** Lectotype (BMNH): card-mounted, "3656. [in Broun's hand] // Old Man Range. Otago. [in Broun's hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // *Allocharis subsulcata*. [in Broun's hand]". Paralectotype (BMNH): 1 same but mounted dorsally, "3656 [in Broun's hand] // Old Man. Otago. [in Broun's hand]".



## *Chalcolampra tarsalis* Broun, 1917

*Allocharis tarsalis* Broun, 1917: 465. Type locality: Gordon's Knob near Belgrove.

*Chalcolampra tarsalis*: Implied combination based on *Allocharis* as an objective synonym of *Chalcolampra* in Daccordi, 1994: 77.

**Comments.** Broun based the description on a single specimen he noted was a male, though two specimens were located in the BMNH: the specimen with the date label and male symbol we confirmed as the holotype. This species was not included in the New Zealand list by Maddison (2010).

**Type examined.** Holotype (BMNH): card-mounted on new card, "3962. [in Broun's hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Gordon's Knob. 15.11.1914. [in Broun's hand] // *Allocharis tarsalis*. ♂ [in Broun's hand]".

## *Maurodus*, gen. nov.

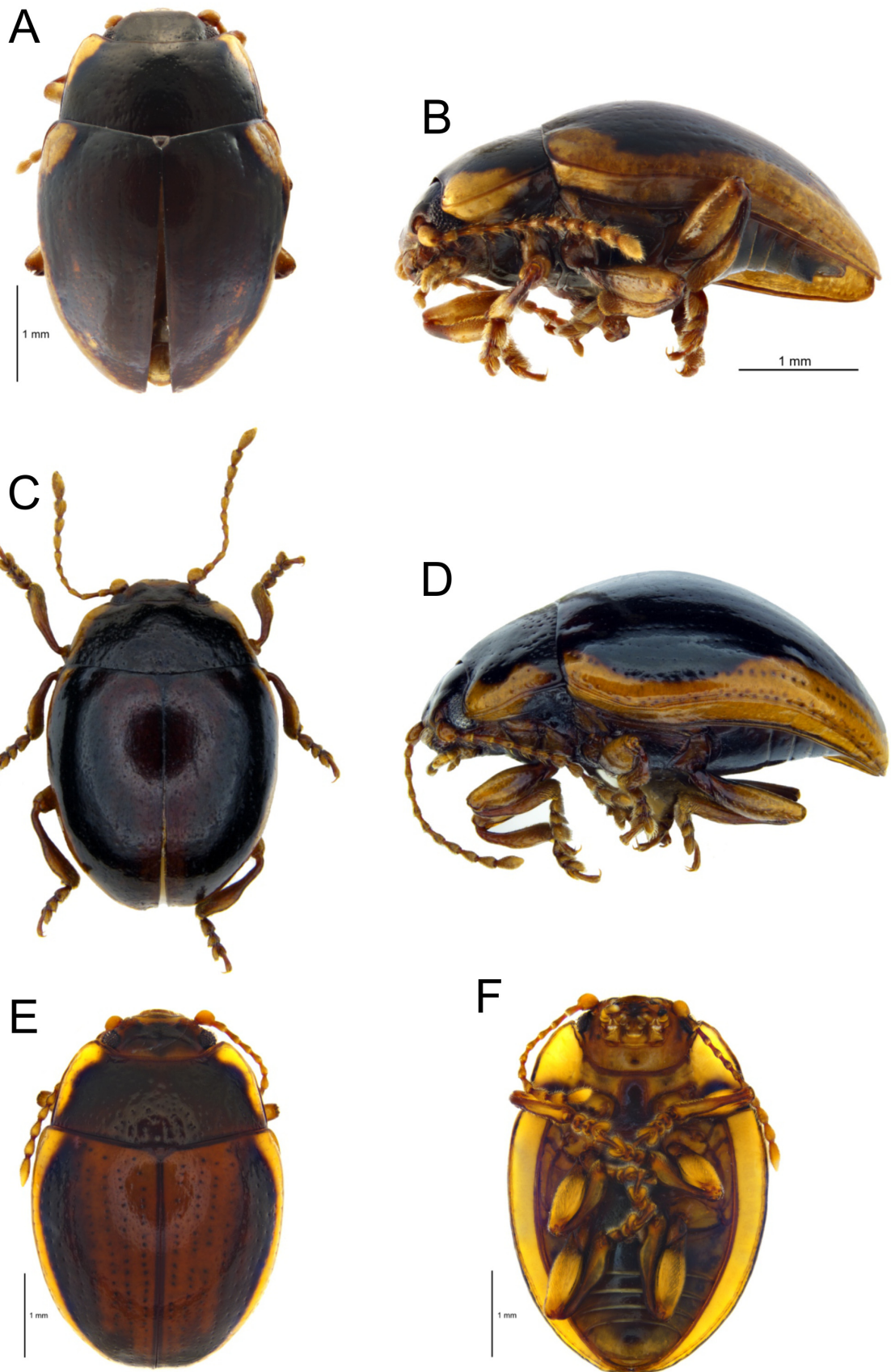
(Figs 4–9)

Type species: *Cacomolpus ornatus* Broun, 1910

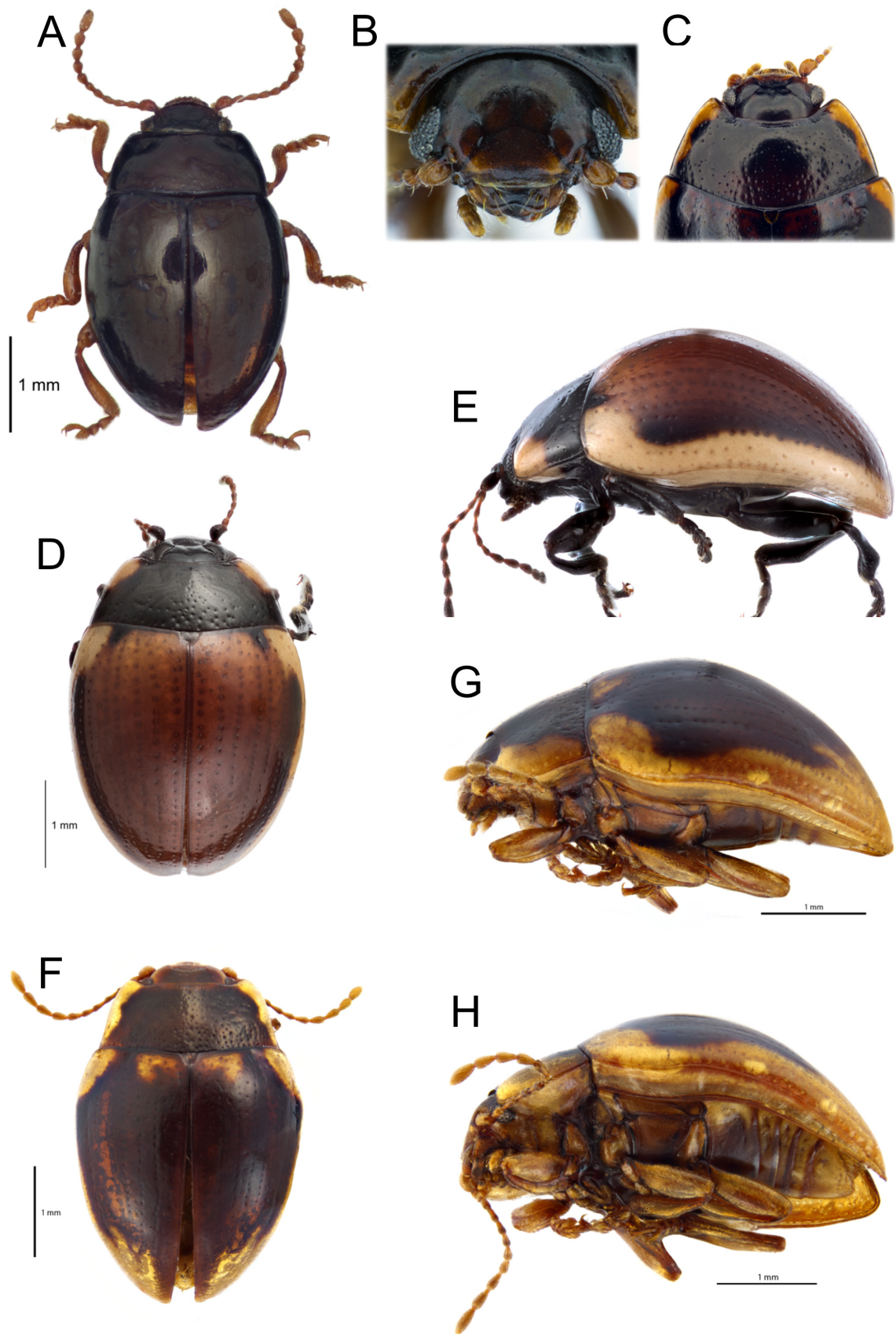
**Diagnosis.** Body length greater than 3.0 mm and less than 8.0 mm; elliptical and moderately convex; colour uniform to tricoloured, metallic sheen absent. Antennae weakly clavate or subfilliform. Procoxal cavities externally open. Hindwings absent. Anterior edge of metaventrite straight; metaventral lines parallel and not extending to middle of ventrite. First abdominal ventrite with subcoxal lines parallel to coxal cavity and not extending to middle of ventrite.

**Description.** Length 3.2–5.1 mm. Body elliptical and moderately convex. Colour of body typically bicoloured to tricoloured, red, orange, black or white, rarely uniform, lacking metallic sheen.

Head not forming a short muzzle with genae extending a short distance beyond level of antennal and maxillary insertions, scarcely visible from above with mouthparts directed anteriorly, wide vertex or frons, nearly flat to feebly convex; postantennal calli weakly developed, but lacking pale areas; antennal groove present or absent. Eyes relatively well-developed, not protuberant, coarsely faceted and consisting of over 30 ommatidia; inner margin of eye without a small seta. Antennae long and weakly clavate, scape short and somewhat elliptic, shorter than the A2+3 combined, last four antennomeres forming a weak club, reaching beyond the hind margin of the pronotum; eye not contacting insertion, with distance between insertion and margin of eye less than diameter of insertion, distance between insertions about 6 times length of the scape. Clypeus transverse to trapezoidal, anterior margin usually straight; frontoclypeal suture usually present; lateral and medial postclypeal lines present or absent and deeply to weakly impressed. Labrum somewhat rectangular and distinctly transverse, anterior margin weakly emarginated and sides rounded, surface with 3 elongate setae per side, anterior margin at middle lacking distinct setal fringe, tor-mae long and thin, about 2 times longer than labral plate. Mandible with terebral edge simple. Maxillary palpus relatively short, palpomere 1 about as long as wide, palpomere 2 transverse and shorter than wide, palpomere 3 about 2 times longer than wide, greater in length than palpomere 2, conical to weakly acute. Labium with relatively wide ligula, greater or equal in width to the lengths of palpomeres 1 and 2 combined, apex not or very weakly divided at apex, palpal insertions separated by at least the width of the basal palpomere, palpi relatively short, palpomere 1 shorter than long, palpomere 2 as long as wide, palpomere 3 twice longer than wide with narrowed and truncated apex. Mentum rectangular and transverse, width of mentum equal to or shorter than the length of labial palpomere 3. Intermaxillary process short and not extending anteriorly far beyond maxillary insertions, delimited behind by a ridge or a bead.

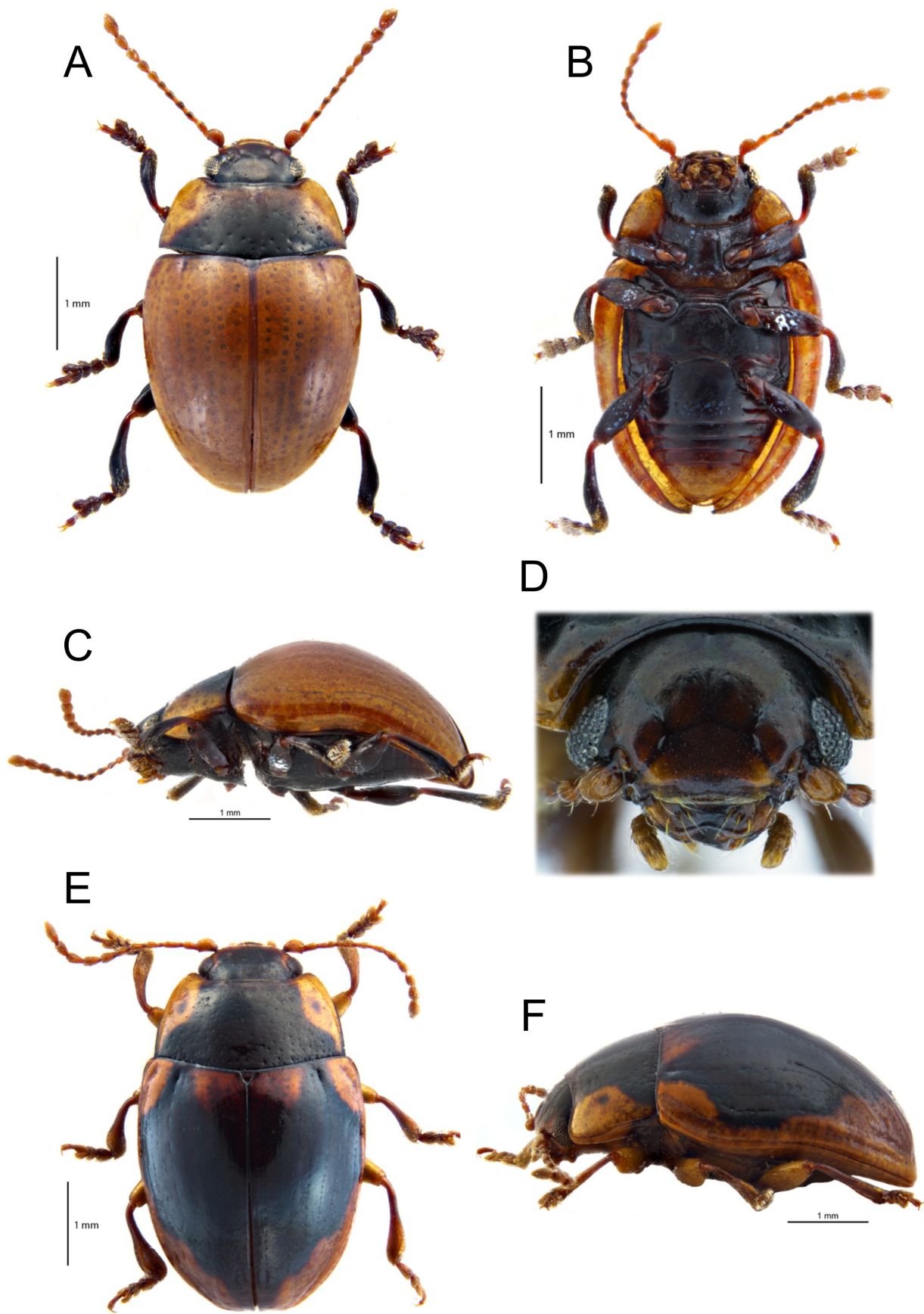


**FIGURES 4A–F.** Habitus of *Maurodus* spp.: A, *Maurodus arcus*, dorsal; B, *Maurodus arcus*, lateral; C, *Maurodus cinctiger*, dorsal, length 4.1 mm; D, *Maurodus cinctiger*, lateral, length 4.2 mm; E, *Maurodus cinctiger*, dorsal; F, *Maurodus cinctiger*, ventral.

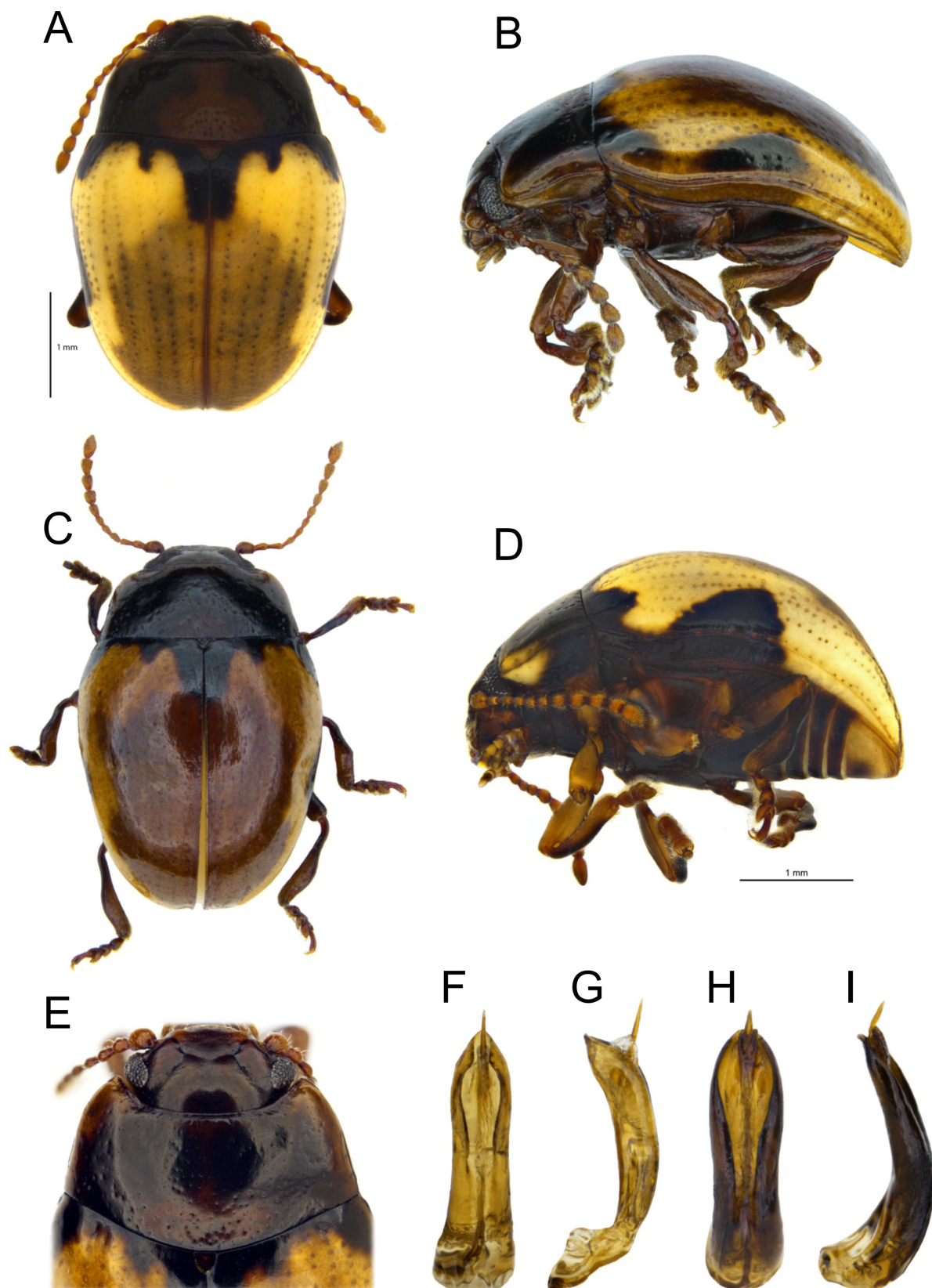


**FIGURES 5A–H.** Habiti and structures of *Maurodus* spp.; A, *Maurodus impressus*, dorsal view of holotype, length 3.1 mm; B, *Maurodus cinctiger*, frontal view of head; C, *Maurodus cinctiger*, dorsal view of head and pronotum; D, *Maurodus lepidus*, dorsal; E, *Maurodus lepidus*, dorsal; F, *Maurodus maculatus*, dorsal; G, *Maurodus maculatus*, lateral; H, *Maurodus maculatus*, oblique lateral.



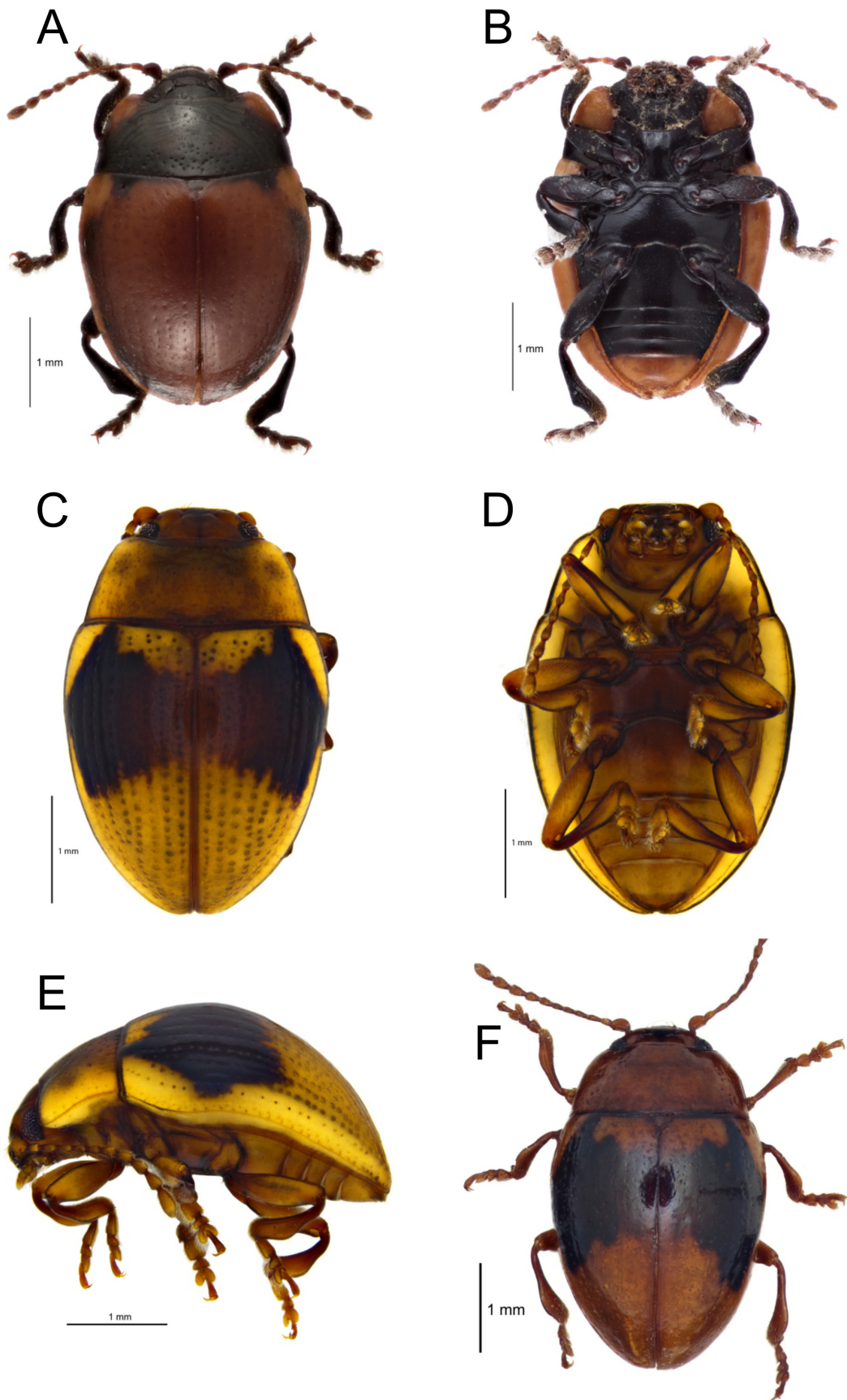


**FIGURES 6A–F.** Habitus and structures of *Maurodus* spp.; A, *Maurodus nunni*, dorsal; B, *Maurodus nunni*, dorsal; C, *Maurodus nunni*, lateral; D, *Maurodus ornatus*, anterior view of head; E, *Maurodus occiduus*, dorsal; F, *Maurodus occiduus*, lateral.

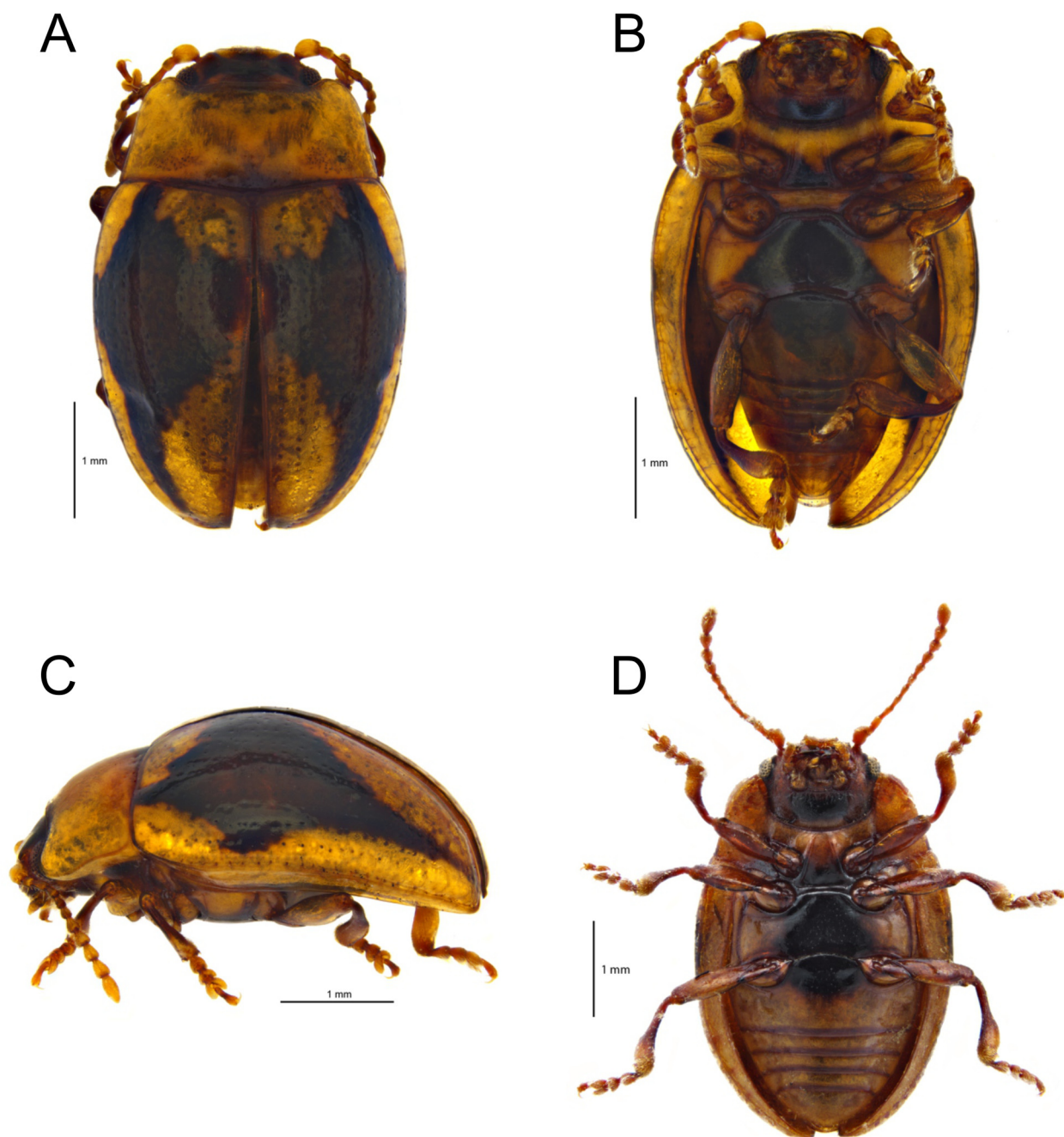


**FIGURES 7A–I.** Habitus and structures of *Maurodus* spp.; A, *Maurodus ornatus*, dorsal; B, *Maurodus ornatus*, lateral, length 3.8 mm; C, *Maurodus ornatus*, dorsal, length 3.9 mm; D, *Maurodus ornatus*, lateral; E, *Maurodus ornatus*, dorsal view of head and pronotum; F, *Maurodus cinctiger*, dorsal view of adeagus; G, *Maurodus cinctiger*, lateral view of adeagus; H, *Maurodus ornatus*, dorsal view of adeagus; I, *Maurodus ornatus*, lateral view of adeagus.





**FIGURES 8A–F.** Habitus of *Maurodus* spp.; A, *Maurodus owenensis*, dorsal; B, *Maurodus owenensis*, ventral; C, *Maurodus plagiatus*, dorsal; D, *Maurodus plagiatus*, ventral; E, *Maurodus plagiatus*, lateral; F, *Maurodus plagiatus*, dorsal holotype.



**FIGURES 9A–D.** Habitus of *Maurodus supernus*; A, dorsal; B, ventral; C, lateral; D, ventral.

Pronotum transverse and convex, with a bead along anterior and lateral margins; posterior edge as wide as or slightly narrower than base of elytra; anterior margin weakly emarginated, anterior angles weakly projecting and rounded; sides distinctly converging anteriorly and straight or curved, posterior margin weakly convex, sinuate or straight; posterior angles acute; disc moderately convex without sublateral groove, trichobothria absent, punctation not uniform and generally coarse and more dense at middle of posterior margin; lateral carinae complete. Prosternum not vaulted at middle, without transverse notches in front of coxal cavities; prosternal lines present and usually parallel, convergent anteriorly in some species or rarely polymorphic and extending forward almost reaching anterior edge of sternite; prosternal process broad, short and extending a short distance behind procoxae, expanded laterally behind coxae but not contacting the hypomerall process; posterior margin straight, procoxal cavities partially externally closed. Notopleural suture distinct. Scutellary shield visible and relatively small, triangular with rounded or subacute apex. Elytra strongly convex, well-developed humeral calli absent but a weak humeral impression may



be present; midbasal stria or impression present; surface smooth, punctures weakly impressed and striate, epipleura wide and well developed, visible in lateral view, apex without ctenidium. Hind wings absent. Mesoventrite mostly hidden in ventral view, posterior portion between mesocoxae visible as a narrow strip; mesal part of mesoventrite with vertical surface confluent with prepectus. Meso- and metacoxae widely separated. Metaventrite shorter than abdominal ventrite 1 at midline, mesocoxal process very short and broad with a straight anterior margin, metaventral lines parallel, discripen present but weakly impressed, transverse metaventral (metakatepisternal) suture present does not cross the midline or weakly impressed. Metendosternite lacking stalk and laminae, widely spaced lateral arms with subapical anterior tendons. Legs with tibiae flattened in cross section, meso- and metatibiae clubbed with abrupt constriction at basal 1/3 or approximately at midlength with lateral edge sinuate (sometimes the protibiae, and weakly sinuate in *M. impressus* and *M. maculatus*), apically setose; tarsomeres 5-5-5 and variable, tarsomere 1 nearly as long as T2 or longer (lengthened or enlarged or not in males), 1.5 times longer than wide or equilateral, T2 transverse and wider than long and wider or narrower than T3, T3 about as wide as long or slightly transverse and deeply incised (bilobed), tarsomere 4 minute, T5 about twice as long as T3, claws simple.

Abdominal ventrite 1 long, but shorter than ventrites 2–5 combined, with a broad metacoxal process that is wider than long and with a curved apical margin, ventrites 2–4 equal in length and much shorter than ventrite 1, ventrite 5 longer than ventrites 3 and 4 combined with rounded posterior margin; first abdominal ventrite with subcoxal lines parallel to coxal cavity that do not extend to middle of ventrite. Aedeagus variable, curved to weakly curved or straight in lateral view and rounded to weakly laterally compressed in cross section; apex in dorsal view acute to rounded or apiculate; flagellum present or absent. Ovipositor with coxite 2 times longer than wide, stylus apically inserted and about 1/6 the length of coxite. Spermatheca curved, C- or V- shaped, collum absent with spermathecal duct inserted onto base, spermathecal gland absent or very weakly sclerotised.

**Comments.** This endemic genus has 11 species, including one transferred here from *Aphilon* (*A. impressus* Broun) and four transferred here from *Caccommolpus* (*C. cinctiger* Broun, *C. maculatus* Broun, *C. ornatus* Broun, and *C. plagiatus* Sharp). All are ground-dwelling, collected mostly by sifting leaf litter, and are flightless with relatively short metaventrites. Species are similar to *Caccommolpus* but can be distinguished by their less rounded shape, parallel-sided metacoxal lines, and gaudy colouration. Many species are rare, some described only from singletons (*M. arcus*, *M. lepidus*, *M. nunni*, and *M. owenensis*).

**Etymology.** Patronymic for Mauro Daccordi for his lifelong commitment to the study of Chrysomelinae (masculine).

**Included species.** *Maurodus arcus* sp. nov., *M. cinctiger* Broun, **comb nov.** (from *Caccommolpus*), *M. impressus* Broun, **comb nov.** (from *Aphilon*), *M. lepidus* sp. nov., *M. maculatus* Broun, **comb nov.** (from *Caccommolpus*), *M. nunni* sp. nov., *M. occiduus* sp. nov., *M. ornatus* (Broun), **comb nov.** (from *Caccommolpus*), *M. owenensis* sp. nov., *M. plagiatus* Sharp, **comb nov.** (from *Caccommolpus*), *M. supernus* sp. nov.

**Distribution.** North Island, South Island.

## Key to species of *Maurodus*

1. Body, exclusive of mouthparts and appendages, unicoloured (Fig. 5A) ..... *M. impressus*
- Body bi- or multicoloured ..... 2
2. Elytra unicoloured (Fig. 6A) ..... *M. nunni*
- Elytra bi- or multicoloured ..... 3
3. Pronotum completely unicoloured yellow, pale or orange (Figs 8C, 9A) ..... 6
- Pronotum bicoloured (Figs 6E, 7D) ..... 4
4. Epipleuron bicoloured and black at base (Fig. 7D) ..... *M. ornatus*
- Epipleuron unicoloured (Fig. 5H) ..... 5
5. Legs entirely black (Fig. 8B) ..... 10
- Legs yellow or bicoloured (Fig. 5H) ..... 7
6. Elytral maculae extending laterally toward apical ½ (Fig. 9A); male tarsomere 1 not greatly enlarged (Fig. 9C) ..... *M. supernus*
- Elytral maculae not extending laterally to apex (Fig. 8C); male tarsomere 1 greatly enlarged (Fig. 8D) ..... *M. plagiatus*
7. Body form more broadly-oval (Figs 4C, E); lateral edge of elytral macula usually more even and not strongly sinuate (Fig. 4E) ..... *M. cinctiger*
- Body form more elongate-oval (Figs 4A, 5F, 6E); lateral edge of elytral macula always irregular and strongly sinuate (Fig. 5G) ..... 8
8. Pale or yellow area of pronotal disc not reaching level of posterior angle (Figs 4A,B) ..... *M. arcus*

- Pale or yellow area of pronotal disc reaching level of posterior angle (Figs 5F,H, 6E,F) ..... 9
- 9. Body form spherical with pronotal sides divergent towards base and elytra widest at basal third with sides more convex in outline (Fig. 5F); male abdominal ventrite 5 vaulted at middle (Fig. 4B) ..... *M. maculatus*
- Body form broader with pronotal sides subparallel towards base and elytra widest at middle with sides weakly convex in outline (Fig. 6E); male abdominal ventrite 5 not vaulted at middle. .... *M. occiduus*
- 10. Prosternal carinae convergent (Fig. 9D); body more curved rounded with sides of pronotum evenly convex (Fig. 5D) ..... *M. lepidus*
- Prosternal carinae parallel-sided (Fig. 8B); body broadly oval and sides of pronotum not evenly convex (Fig. 8A) ..... *M. owenensis*

***Maurodus arcus*, sp. nov.**

(Figs 4A,B; map Fig. 19A)

**Diagnosis.** Body broadly ovate and bicoloured; pronotum bicoloured. Antennal groove not demarked by ridges. Prosternal lines in front of procoxae parallel. Elytra with midbasal stria present; maculae broad with outer edges sinuate and contacting broadly at midline; microsculpture strongly impressed. Ventrites dark-coloured and infuscate, with anterior portion of hypomera and entire epipleura pale-coloured; male ventrite 5 vaulted at middle. Legs bicoloured with femora and tibiae infuscate; tarsomere 1 of male greatly enlarged.

**Description.** Length 3.8 mm (greatest depth 1.6 mm). Body broadly oval and bicoloured with most of the head, most of the pronotum, elytral macula, and middle portions of the ventral surfaces black; extreme anterior margin of clypeus, margins of pronotum and elytra, mouthparts, antennae, anterior portion of the hypomera and epipleura, yellow-coloured; elytral maculae sinuate along lateral edge. Microsculpture distinct, present on pronotum and elytra. Clypeus finely punctate, semicircular, anterior margin nearly straight; frontoclypeal suture present with lateral postclypeal lines present and very weakly impressed and medial line indicated by a very faint glabrous area; vertex moderately punctate, slightly more coarse than clypeal punctures. Ratio of antennomere lengths: 1.5/0.9/1.3/1.0/1.0/1.2/1.2/1.0/1.2/1.3/1.9. Antennal groove not well demarked by ridges. Pronotum transverse (2.75 x wider than long), lateral margins at base not subparallel-sided and sides converging anteriorly, not strongly convex; punctures coarse at base and progressively shallower anteriorly, and somewhat uniform anteriorly, those at base stronger than elsewhere on the dorsum, apart from the latero-apical striae of the elytra. Prosternal lines or carinae in front of procoxae parallel; intercarinal space flat. Elytra widest at basal 1/3 and broad (1.07x the greatest elytral width), 3.75x longer than pronotal length; punctuation weakly striate, not impressed towards midline; midbasal stria present. Male ventrite 5 vaulted at middle. Tarsomere 1 of male greatly enlarged.

**Comments.** This species is represented by a single male specimen collected by sifting tussock litter at Rainbow Ski Field where access is granted with permission. *Maurodus arcus* can be distinguished from most species of the genus by the presence of a process or vaulted abdominal ventrite 5 in the male, which is shared with *M. maculatus* and can be distinguished from it based on the shape of the body where the elytra are widest at the basal 1/3, the elytral macula broadly contacts the anterior margin of the elytra, and the hypomeron is bicoloured. *Maurodus arcus* can be further differentiated from *M. maculatus* by the head which is not infuscate with only the anteriormost edge of the clypeus yellow-coloured and the vaulted medial process of the male is more strongly produced.

**Distribution.** South Island: NN.

**Etymology.** The specific epithet is derived from the Latin word *arcus* one meaning of which is “rainbow”, referring to the type locality of this new species.

**Type examined.** Holotype (NZAC): “NEW ZEALAND MB Rainbow Ski Field Rd below ski field St Arnauud Ra 26 Feb 2010 TR Buckley R Leschen L Dunning // TB339 sifting tussock litter 41 52.790 S, 172 51.572 E, 1456m”.

***Maurodus cinctiger* (Broun, 1921), comb. nov.**

(Figs 4C–F, 5B,C, 7F,G, 13D, 18A; map Fig. 19B)

*Caccommolpus cinctiger* Broun, 1921a:590. Type locality: Glenhope.

**Diagnosis.** Body broadly oval and tricoloured; pronotum bicoloured. Antennal groove delimited by an inner ridge;

internal surface glabrous. Prosternal lines in front of procoxae parallel to anteriorly convergent. Elytra with mid-basal stria present; maculae broad with outer edges even and contacting broadly at midline; microsculpture weakly impressed (strong in one specimen from Saddle Hill). Ventrites dark-coloured, with hypomera bicoloured and epipleura uniformly pale-coloured; male ventrite 5 not vaulted at middle. Legs bicoloured with femora pale-coloured and dark-coloured tibiae; tarsomere 1 of male not greatly enlarged.

**Description.** Length 3.3–5.1 mm (greatest depth 1.50–2.80 mm). Body broadly oval and tricoloured with most of the head, most of the pronotum and part of the elytral macula and ventral surfaces and tibiae, dark to black; anterior portion of the clypeus, margins of the pronotum and elytra, mouthparts, antennae, anterior portion of hypomera, and epipleura, yellow to pale-coloured; central portions of elytral maculae chestnut to uniform black and even along lateral edge. Microsculpture distinct, present and weakly impressed on elytra (strongly impressed in a specimen from Saddle Hill). Clypeus coarsely to finely punctate, trapezoidal, nearly as long as wide, anterior margin straight; frontoclypeal suture present with medial and lateral postclypeal lines present that may be weakly impressed or absent; vertex weakly or apunctate, usually less coarse than clypeal punctures. Ratio of antennomere lengths: 1.5/1.0/1.2/1.0/1.1/.9/1.1/1.2/1.4/1.5/1.9. Antennal groove delimited by an inner ridge, internal surface glabrous. Pronotum transverse (2.45–2.62 x wider than long), lateral margins at base not subparallel-sided and converging anteriorly; punctures not uniform, coarse at base and usually progressively diffuse anteriorly, those at base stronger than elsewhere on the dorsum. Prosternal lines or carinae in front of procoxae parallel or anteriorly convergent with the anterior width 0.68x narrower than procoxal width; intercarinal space weakly convex. Elytra widest at basal 1/3 and broad (1.21–1.34x the greatest elytral width), 3.37–3.64x longer than pronotal length; punctation very weakly striate, not impressed towards midline; midbasal stria present. Tarsomere 1 of male not greatly enlarged. Male ventrite 5 not vaulted at middle. Spermatheca annulate, open and u-shaped and narrowed basally with a distinct duct and small basal gland; collum absent. Median lobe of aedeagus in lateral view gradually narrowed from basal ¼ to apex and acute; in dorsal view wide, slender at sides with a subacute apex; flagellum present.

**Comments.** *Maurodus cinctiger* is distinguished from all other species by having a broad chestnut to black elytral macula and unicoloured epipleura. Its broad outline distinguishes it from most species, including *M. ornatus* and other tricoloured species.

Broun described this species based on two specimens, one of which was “badly crushed and somewhat immature” and labelled it as a variant, but is considered here as part of the syntype series (note that Mt. Hope is just west of Glenhope). Both were in the BMNH and one we designated as the lectotype to stabilise the epithet, the other was designated as a paralectotype. Pinned to the undamaged specimen, was an identification label by M. Daccordi (pers. obs.) indicating the species belongs to a separate genus and there were three additional specimens adjacent to the species label in the Broun collection that were not syntypes.

**Distribution.** South Island: BR, NN.

**Types material examined.** Lectotype (BMNH): re-mounted on card with terminalia and ovipositor extracted [left (A6–11) and right (A2–11) antennomeres and tarsomeres from left hindleg and right midleg missing], “4152. ♀. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Glenhope. 20.12.1914. [in Broun’s hand] // *Cacomolpus cinctiger*. ♀. [in Broun’s hand] // Aotearoanus cinctiger (Broun) [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi’s hand]”. Paralectotype (BMNH): 1 card-mounted, “4152. ♀. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // M<sup>t</sup> Hope. 14. 2.15. [in Broun’s hand] // var. *C. cinctiger*. [in Broun’s hand] // Aotearoanus cinctiger (Broun) [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi’s hand]”.

**Additional material examined.** NN: Saddle Hill, 3000’, 41.275403S, 173.431698E, 12.01.1981, E.S. Gourlay (1, NZAC); Mt Arthur Tk, nr carpark, 41.189998S, 172.746243E, beating at night RL938, 22.01.2005, R. Leschen, T. Buckley, R. Hoare (4, NZAC); Mt Arthur Tk Ridge, above Mt Arthur Hut, 1347m, 41.197843S, 172.711686E, sifting tussock litter TB362, 01.03.2010, T. Buckley, R. Leschen, L. Dunning (1, NZAC); Mt Arthur Hut, 23 Jan 2012, R. Leschen, L. Dunning, H. Lindsay, 41.197893S, 172.713534E, sifting *Olearia* litter, RL1628 (2, NZAC); Mt Arthur Hut, 23 Jan 2012, R. Leschen, L. Dunning, H. Lindsay, 41.197893S, 172.713534E, sifting litter (mainly *Poa* and *Phormium*), RL1629 (1, NZAC); Lyell Walkway, FIT RL339, 8–19/2/1999, R. Leschen, R. Hoare (1, NZAC); Flora Saddle Carpark, 41.189863S, 172.746362E, on filmy fern *Nertera astelia*, 04.05.1997, J.S. Dugdale (1, NZAC); Mt Owen, 41.552011S, 172.541345E, 13.03.1938, C.E. Clarke, C.E. Clarke Collection, (1, AMNZ); Mt Glasgow, 41.588294S, 172.052547E, 23.02.1938, C.E. Clarke Collection (1, AMNZ; 1 BMNH); Waikaiha R, N Karamea, 41.588983S, 172.054276E, 02.03.1935, C.E. Clarke Collection (1, AMNZ); Mt Hope,

41.664986S, 172.514238E, 14.02.1915, 4152 Broun Collection (1, BMNH); Mt Arthur Tableland, Balloon Hut, 41.168895S, 172.622347E, 21.01.1943, C.E. Clarke, C.E. Clarke Collection (1, AMNZ; 1, BMNH); Mt Arthur, Flora Hut, 41.182574S, 172.729877E, 14.01.1943, C.E. Clarke, C.E. Clarke Collection (1, BMNH); Maggie Creek, 41.784618S, 172.723333E, 23.12.1915, 4152 Broun Collection (1, BMNH); Riwaka Resurgence, Abel Tasman National Park, mixed beech/punga/broadleaf forest, 15 Dec 2007, K. Marske, J. Allwood, sifted leaf and wood litter, S 41.01.978', E 172.54.031', KM144, 98m (3, NZAC). **BR:** Punakaiki, Pororari River mouth, 42.100033S, 171.337626E, in flood debris, 29.12.2010 [J.Nunn] (2, NZAC); Punakaiki, Truman Tk, 4.iv.1994, J.W.M. Marris (1, LUNZ); Mt Faraday, 14 Jan 2014, M. Gimmel, R. Leschen, T. Buckley, sifting tussock and leaf litter, RL1723, 1280 m, 42°01.972'S, 171°34.638'E (1 + 1 associated larva, NZAC); Sewell Peak, 27 Jan 2012, R. Leschen, L. Dunning, sifting litter and rotten wood, 42.406342S, 171.342016E, RL1635 (1, NZAC); Mawhera SF, 19km SE of Ngahere, litter 72/81, 25.01.1972, J.M. McBurney (1, NZAC); Mt Robert, 41.831676S, 172.810804E, 17.01.1984, G. Kuschel (1, NZAC); L Rotoiti, 600–700m, 41.811721S, 172.836988E, in sphagnum, 23–27/12/1983 (3, BMNH); Rotoiti, 41.849466S, 172.841229E, 16.06.1916, 4152 Broun Collection (1, BMNH); same except 26.07.1916 (1, BMNH); L. Rotoiti, 615m, 19–25.xii, J.W. Early, Swept in Nothofagus forest at night (2, LUNZ); Nelson Lakes NP, E. Matakita R, Mt Una Tk, 1050m, R.M. Emberson & P. Syrett, under logs Nothofagus forest (1, LUNZ).

***Maurodus impressus* (Broun, 1914), comb. nov.**

(Fig. 5A, 13C; map Fig. 19A)

*Aphilon impressa* Broun, 1914:258. Type locality: McClennan's Bush, near Methven.

**Diagnosis.** Body oval and unicoloured. Antennal groove not demarked by ridges. Prosternal lines in front of procoxae parallel. Elytra with midbasal puncture weakly indicated; microsculpture present. Ventral portions dark-coloured; male ventrite 5 not vaulted at middle. Legs unicoloured.

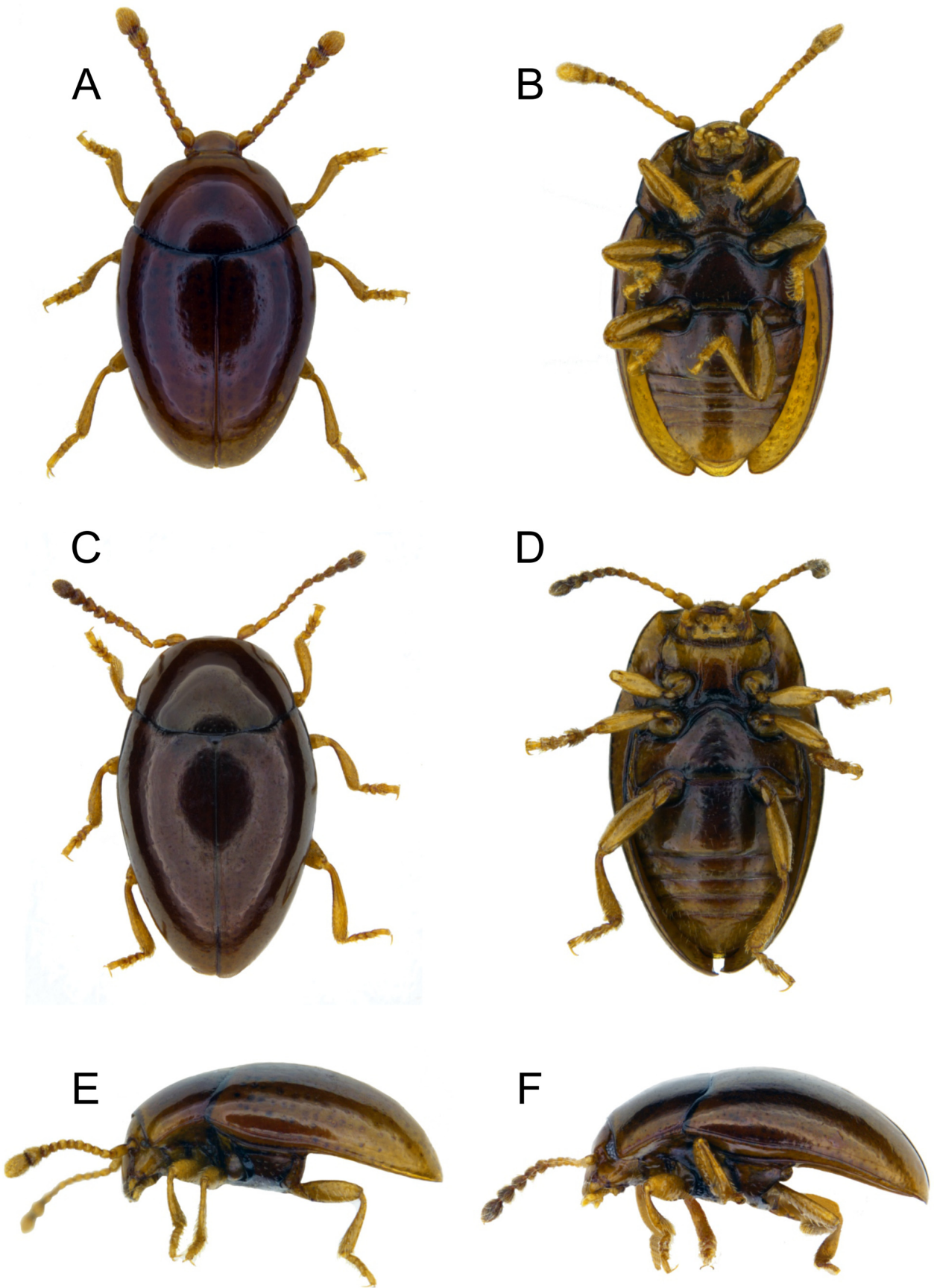
**Description.** Length 3.0–3.2 mm (greatest depth 1.60 mm). Body oval and almost entirely black; antennae, mouthparts, and legs yellow to pale-coloured. Microsculpture distinct, present and strongly impressed on elytra. Clypeus finely punctate, semicircular, nearly as long as wide, anterior margin weakly curved; frontoclypeal suture present with lateral postclypeal lines present, medial line absent; vertex weakly punctate, less coarse than clypeal punctures. Ratio of antennomere lengths: 1.1/0.7/0.8/0.8/0.7/0.7/0.8/0.9/0.9/0.9/1.5. Antennal groove not demarked by ridges. Pronotum transverse (2.00–2.43 x wider than long), lateral margins at base not subparallel-sided and sides converging anteriorly; punctures not uniform, coarse at base and progressively diffuse anteriorly and weak, those at base stronger than elsewhere on the dorsum. Prosternal lines or carinae in front of procoxae parallel; intercarinal space convex. Elytra widest at middle and moderately convex (0.90–1.00 x the greatest elytral width), 2.55–3.28 x longer than pronotal length and broad; punctation very weakly striate, not impressed towards midline; midbasal puncture weakly indicated. Male ventrite 5 not vaulted at middle. Spermatheca annulate, open and L-shaped and weakly narrowed basally without a distinct basal gland; collum absent.

**Comments.** Broun based the description on a single specimen which we located in the BMNH and confirmed as the holotype. Under direct light this specimen is red brown in colour with a darker border, a discolouration that may have been the result from dissection or it being slightly teneral; a variant pinned next to it in the Broun collection and from Mt Hutt is female and unicoloured. Broun mentioned that “it is the first of this genus that has been secured in the South Island” and differs “from all the species of about equal bulk this is distinguishable by the thoracic impressions and apparently smooth elytra.” This species is transferred from *Aphilon* to *Maurodus* because the abdominal ventrite has the subcoxal lines parallel to coxal cavity forming a narrow bead. It can be distinguished from all other members of *Maurodus* from its unicoloured body.

**Type examined.** Holotype (BMNH): re-pointed with cleared abdomen and female terminalia in media on separate acetate card, “3666 [in Broun's hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // McClellans. 25.3.1912. [in Broun's hand] // *Aphilon impressa* [in Broun's hand] // *Aphilon impressum* Broun [hand-written] det. M. Daccordi [printed] 1987 [in Daccordi's hand]”.

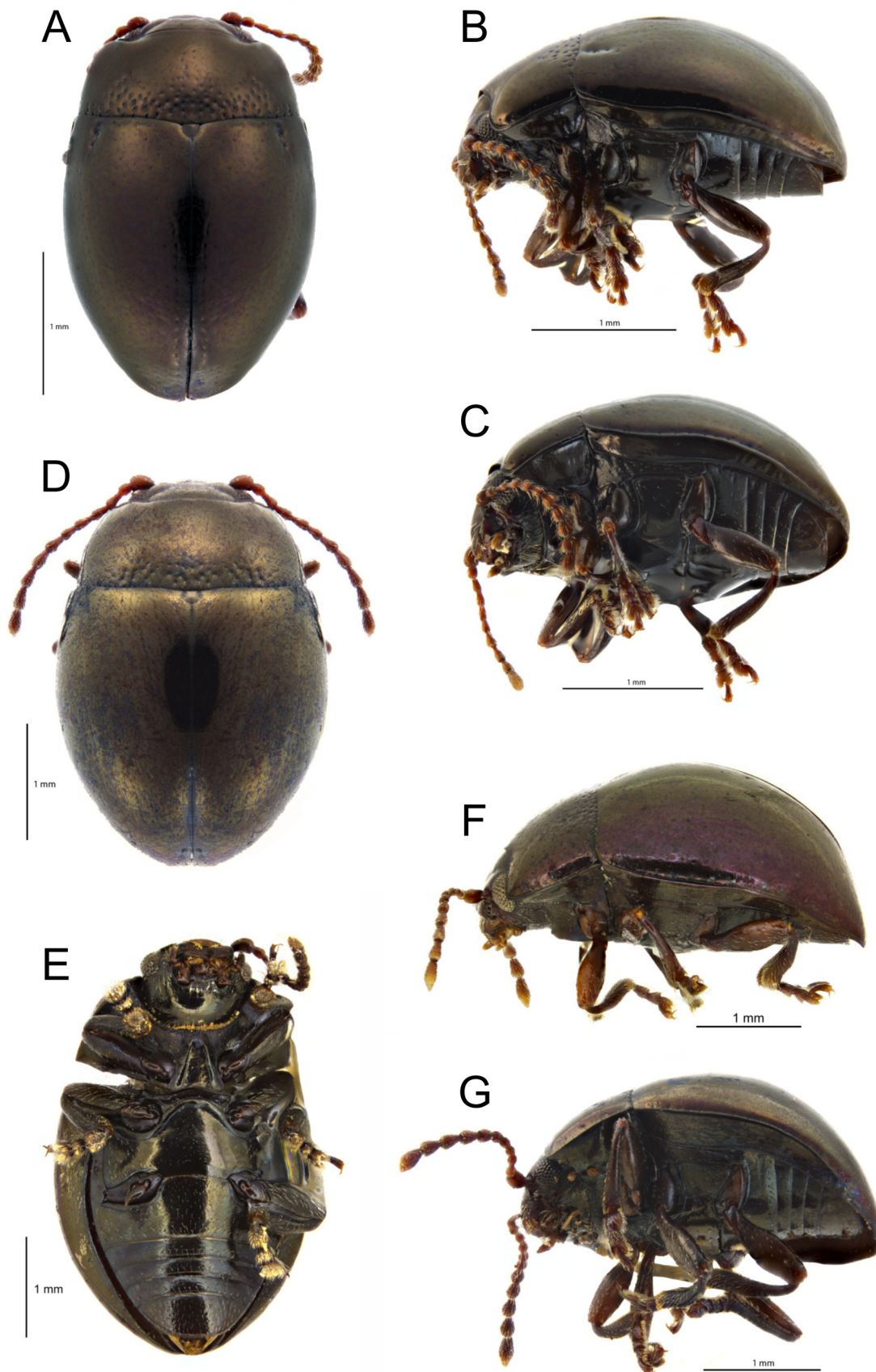
**Additional material examined: South Island. MC:** Mt Hutt, 43.586446S, 171.524205E, 05.01.1913, 3666 Broun Collection (1, BMNH).





**FIGURES 10A–F.** Habitus of *Nanomela* spp.; A, *Nanomela* sp., dorsal, length 1.5 mm; B, *Nanomela* sp., ventral, length 1.5 mm; C, *Nanomela tiniheke*, dorsal, length 2.2 mm; D, *Nanomela tiniheke*, ventral, length 2.2 mm; E, *Nanomela* sp., lateral, length 1.5 mm; F, *Nanomela tiniheke*, ventral, length 2.2 mm.





**FIGURES 11A–G.** Habitus of *Zeaphilon* spp.; A, *Zeaphilon marskeae*, dorsal; B, *Zeaphilon marskeae*, lateral; C, *Zeaphilon marskeae*, oblique lateral; D, *Zeaphilon mirandum*, dorsal; E, *Zeaphilon mirandum*, ventral; F, *Zeaphilon mirandum*, lateral; G, *Zeaphilon mirandum*, oblique lateral.

***Maurodus lepidus*, sp. nov.**  
(Figs 5D,E, 18B; map Fig. 20A)

**Diagnosis.** Body nearly spherical and tricoloured; pronotum bicoloured. Antennal groove deep and well delimited by an inner ridge; internal surface not glabrous. Prosternal lines in front of procoxae convergent. Elytra with midbasal stria present; maculae broad with outer edges sinuate and contacting broadly at midline; microsculpture impressed. Ventrites dark-coloured, with hypomera bicoloured and epipleura uniformly white-coloured; male ventrite 5 not vaulted at middle. Legs unicoloured black; tarsomere 1 of male greatly enlarged.

**Description.** Length 5.1 mm (greatest depth 2.0 mm). Body nearly spherical and tricoloured with head, much of the pronotum, midbasal striae, ventral surfaces, antennae, mouthparts, and legs black; anterior portion of pronotum and hypomera, epipleura and ventrite 5 white or pale; elytral maculae chestnut with slightly darker lateral margin and sinuate along lateral edge. Microsculpture distinct and present on the pronotum and absent on elytra. Clypeus finely punctate, semicircular with anterior margin straight; frontoclypeal suture present with lateral postclypeal lines deeply impressed, medial line absent; vertex finely punctate and similar to clypeus. Ratio of antennomere lengths: 1.5/.8/1.2/1.1/1.0/.8/1.0/1.1/1.2/1.3/2.0. Antennal groove deep and well delimited by an inner ridge; internal surface not glabrous. Pronotum transverse (2.3 x wider than long), lateral margins, strongly converging anteriorly; punctures not uniform, coarse at base and progressively diffuse anteriorly, those at base as strong as those contained in the elytral striae. Prosternal lines or carinae in front of procoxae convergent with the anterior width 0.17x narrower than procoxal width; intercarinal space flat. Elytra widest at basal 1/3 and broad (0.96x the greatest elytral width), 2.8x longer than pronotal length; punctation moderately to coarsely striate, more impressed at the apical 1/3 and towards the midline; midbasal stria relatively deep. Male ventrite 5 not vaulted at middle. Tarsomere 1 of male greatly enlarged.

**Comments.** This new species is distinctive and can be distinguished from all other *Maurodus* species by the nearly spherical shape of the body. It most closely resembles *M. owenensis* but can be distinguished from it by the colouration and the shape of the prothorax which is highly convex and strongly convergent anteriorly. It also is like *M. cinctiger*, but differs from it by having a deep antennal groove and by its colouration, most notably having unicoloured black legs. The single specimen is a male and was not dissected. The locality, Karamea Bluff, is easily accessible and additional attempts should be made to collect more material.

**Distribution.** South Island: NN.

**Etymology.** The specific epithet is derived from the Latin word *lepidus* meaning attractive.

**Type Examined.** Holotype (NZAC): male, "NEW ZEALAND NN, Karamea Bluff, 9 Feb 1999, R. Leschen, R. Hoare berlesate // RL275 41°31'S 172° 01'E [41.50692; 172.01681]".

***Maurodus maculatus* (Broun, 1893), comb. nov.**  
(Figs 5F–H, 12C,D, 18C; map Fig. 19A)

*Cacomolpus maculatus* Broun, 1893b:1309. Type locality: Mount Arthur.

**Diagnosis.** Body spherical and bicoloured; pronotum bicoloured. Antennal grooved not delimited by ridges. Prosternal lines in front of procoxae parallel to anteriorly convergent. Elytra with midbasal stria or puncture present; maculae broad with outer edges sinuate and contacting broadly at midline; microsculpture strongly impressed. Ventrites dark-coloured and infuscate, with hypomera and epipleura uniformly pale-coloured; male ventrite 5 vaulted at middle. Legs bicoloured with femora and tibiae infuscate or yellow; tarsomere 1 of male greatly enlarged.

**Description.** Length 3.3–3.9 mm (greatest depth 1.80–2.00 mm). Body spherical and bicoloured with most of the head, most of the pronotum, elytral macula, and middle portions of the ventral surfaces black; anterior portion of the clypeus, margins of the pronotum and elytra, mouthparts, antennae, hypomera, and epipleura yellow to pale-coloured; elytral maculae sinuate along lateral edge. Microsculpture distinct, present on pronotum and elytra. Clypeus finely punctate, semicircular, anterior margin straight; frontoclypeal suture present with medial and lateral postclypeal lines weakly impressed or absent; vertex weakly punctate but may be slightly stronger than those on clypeus. Ratio of antennomere lengths: 1.4/.9/1.4/1.2/1.0/1.0/1.0/1.2/1.2/1.4/1.9. Antennal groove not delimited by ridges. Pronotum transverse (2.18–2.75 x wider than long), lateral margins at base not subparallel-sided and sides

converging anteriorly, not strongly convex; punctures tend to be non-uniform, sometimes more coarse or well-impressed at base and not usually progressively diffuse anteriorly, stronger than much of the dorsum, apart from the latero-apical striae of the elytra. Prosternal lines or carinae in front of procoxae parallel or convergent with the anterior width 0.66x narrower than procoxal width; intercarinal space flat. Elytra widest at basal 1/4 with a nearly convex outline (1.11–1.50x the greatest elytral width), 3.82–3.87x longer than pronotal length and broad; punctation striate, not strongly impressed; midbasal stria present and weakly developed and shallow. Male ventrite 5 vaulted at middle. Median lobe of aedeagus in lateral view narrowing from basal 1/3 to apex and acute; in dorsal view, parallel-sided with a ligulate apex; flagellum present. Tarsomere 1 of male greatly enlarged.

**Comments.** Broun described *Caccommolpus maculatus* from a single specimen that we located in the BMNH. This species is transferred from *Caccommolpus* to *Maurodus* because the subcoxal lines on abdominal ventrite 1 are parallel to coxal cavities forming a narrow bead. *Maurodus maculatus* can be distinguished from most species of the genus by the presence of a process or vaulted abdominal ventrite 5 in the male, which is shared with *M. arcus* and can be distinguished from it based on the shape of the body where the elytra are widest at the basal 1/4, the elytral macula is narrowed towards the base, and the hypomeron is pale or yellow.

**Distribution.** South Island: NN, MB.

**Type examined.** Holotype (BMNH): re-mounted on point with aedeagus glued to margin of card, “2965. [in Broun’s hand] // Mount Arthur // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // *Caccommolpus maculatus*. [in Broun’s hand] // *Aotearoanus maculatus* (Broun) [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi’s hand]”.

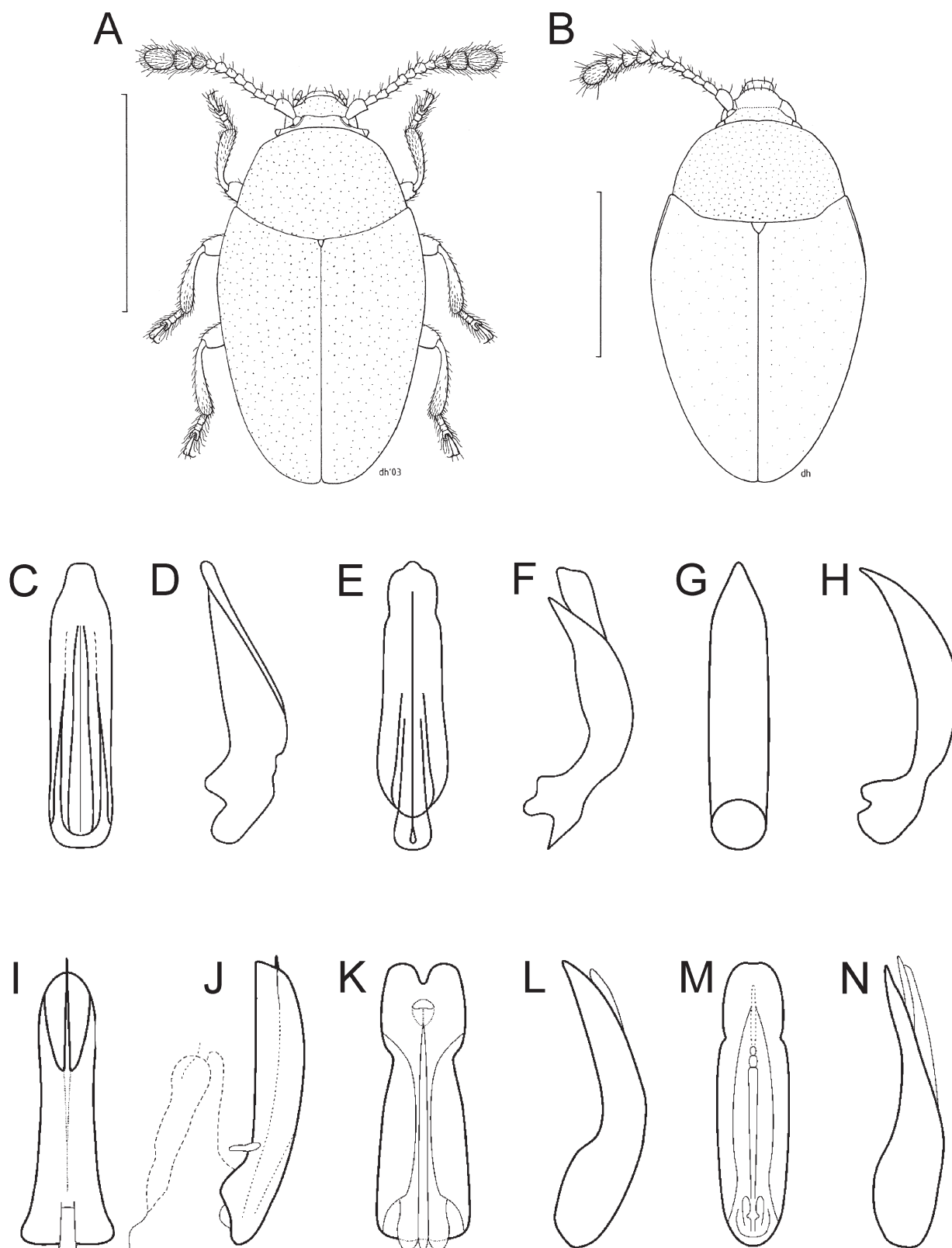
**Additional material examined. South Island. NN:** Mt Arthur Tk Ridge, above Mt Arthur Hut, 1347m, 41.197843S, 172.711686E, sifting tussock litter TB362, 01.03.2010, T. Buckley, R. Leschen, L. Dunning (1, NZAC); L. Peel, on moss at night, 1340m, 19.iv.1987, R.M. Emberson (2, LUNZ); L. Sylvester, 10.ii.1985, R.M. Emberson, tussock and subalpine scrub, LCNZ 85/1 (1, LUNZ); Mt Arthur Tableland, Balloon Hut, 41.168895S, 172.622347E, 21.01.1943, C.E. Clarke, C.E. Clarke Collection (4, AMNZ; 3 BMNH). **MB:** Mt Stokes, 41.088012S, 174.104473E, under rocks in tussock, 12.10.1967, J.I. Townsend (1, NZAC). **WD:** Arthurs Pass NP, Kellys Creek, 460m, 11.xi.1985, R.M. Emberson & P. Syrett, mossy rocks and trees at night (1, LUNZ).

### *Maurodus nunni*, sp. nov.

(Figs 6A–C, 12G,H; map Fig. 20A)

**Diagnosis.** Body oval and tricoloured; pronotum bicoloured. Antennal groove delimited by an inner ridge; internal surface glabrous. Prosternal lines in front of procoxae parallel. Elytra with midbasal puncture present; colour uniform lacking maculae; microsculpture weakly impressed to absent. Ventrites dark-coloured, with hypomera darker posteriorly and epipleura uniformly pale-coloured; male ventrite 5 not vaulted at middle. Legs mostly black-coloured; tarsomere 1 of male not greatly enlarged.

**Description.** Length 2.7–4.1 mm (greatest depth 1.50–1.70 mm). Body oval and tricoloured with head posterior and middle portions of the pronotum, most of the ventral surfaces and most of the legs black; margins and anterior portions of the pronotum, elytra, mouthparts, antennae, hypomera, epipleura, and yellow to orange-coloured; elytra maculae absent. Microsculpture distinct on head, weakly developed on pronotum, and absent from elytra. Clypeus more or less apunctate, trapezoidal, anterior margin straight; frontoclypeal suture present but not meeting at midline with lateral postclypeal lines present and well developed and medial line absent; vertex very weakly or apunctate. Ratio of antennomere lengths: 1.2/1.0/1.2/.9/.8/.7/.7/1.0/1.0/1.0/1.5. Antennal groove well-delimited by an inner ridge and deep; internal surface glabrous. Pronotum transverse (2.57–2.62 x wider than long), lateral margins at base not subparallel-sided and converging anteriorly; punctures non-uniform, coarse at base and may or may not be dense, and progressively diffuse anteriorly, those at base stronger than elsewhere on the body, apart from some contained in the apicalmost portions of the elytral striae. Prosternal lines or carinae in front of procoxae parallel; intercarinal space weakly convex. Elytra widest at basal 1/3 and broad (1.07–1.08 x the greatest elytral width), 2.80–3.00x longer than pronotal length; punctation very weakly striate, not impressed towards midline, well developed posterolaterally; midbasal puncture present. Male ventrite 5 not vaulted at middle. Median lobe of aedeagus in lateral view narrow with an acute apex; in dorsal view narrow and parallel-sided with a subacute apex; flagellum present. Tarsomere 1 of male not greatly enlarged.



**FIGURES 12A–N.** Habitus and genitalia; A, *Nanomela* sp., dorsal, scale = 1 mm; B, *Nanomela tiniheke*, dorsal, scale = 1 mm; C, *Maurodus maculatus*, aedeagus, dorsal view; D, *Maurodus maculatus*, aedeagus, lateral view; E, *Maurodus occiduus*, aedeagus, dorsal view; F, *Maurodus occiduus*, aedeagus, lateral view; G, *Maurodus nunni*, aedeagus, dorsal view; H, *Maurodus nunni*, aedeagus, lateral view; I, *Maurodus supernus*, aedeagus, dorsal view; J, *Maurodus supernus*, aedeagus, lateral view; K, *Zeaphilon marskeae*, aedeagus, dorsal view; L, *Zeaphilon marskeae*, aedeagus, lateral view; M, *Zeaphilon mirandum*, aedeagus, dorsal view; N, *Zeaphilon mirandum*, aedeagus, lateral view.



**Comments.** *Maurodus nunni* is known from only two specimens, including one male from Dun Mt. we dissected. The species is distinguished from all other species by having unicoloured orange or yellowish elytra.

**Distribution.** South Island: NN.

**Etymology.** This epithet honours collector John Nunn for his valued and ongoing contributions to the study of New Zealand Coleoptera.

**Type examined.** Holotype (NZAC): not sexed, “New Zealand NN Flora saddle car park 26-Nov-05 // in wet ground moss” [41.189863S, 172.746362E, J. Nunn]. Paratype (NZAC): Dunn [sic] Mt, 2000’ [41.342298S, 173.376741E 25.02.1949] E.S. Gourlay.

***Maurodus occiduus*, sp. nov.**

(Figs 6E,F, 12E,F; map Fig. 20A)

**Diagnosis.** Body broadly oval and bicoloured; pronotum bicoloured with a distinct spot in the anterolateral portion of the disc. Antennal groove weakly indicated; inner ridge weak or absent and glabrous area present or absent. Prosternal lines in front of procoxae parallel. Elytra with midbasal stria or puncture present; maculae broad with outer edges sinuate and contacting broadly at midline; microsculpture present or absent. Ventrites dark-coloured and infusate, with hypomera and epipleura uniformly pale-coloured; male ventrite 5 not vaulted at middle. Legs unicoloured yellow to weakly infusate; tarsomere 1 of male greatly enlarged.

**Description.** Length 3.5–4.4 mm (greatest depth 1.70–2.10 mm). Body broadly oval and bicoloured with head, most of the pronotum, elytral macula, and middle portions of the ventral surfaces black; anterior portion of clypeus, margins of pronotum and elytra, mouthparts, antennae, hypomera, and epipleura yellow to pale-coloured; a distinct spot is present in the anterolateral portion of the pronotal disc; elytral maculae sinuate along lateral edge; femora and tibiae unicoloured yellow to weakly infusate with femora dark at base. Microsculpture distinct to absent on pronotum and elytra. Clypeus moderately to very finely punctate, more or less trapezoidal, anterior margin straight; frontoclypeal suture absent or present but not strongly impressed and not meeting at midline; lateral postclypeal lines present medial line absent; vertex moderately to very finely punctate. Ratio of antennomere lengths: 1.3/1.0/1.4/1.2/1.2/1.0/1.2/1.2/1.4/1.4/1.9. Antennal groove weakly indicated; inner ridge weak or absent and glabrous area present or absent. Pronotum transverse (2.10–2.17 x wider than long), lateral margins at base subparallel-sided and sides weakly converging anteriorly, not strongly convex; punctures non-uniform, more or less coarse at base and progressively diffuse anteriorly, those at base usually stronger than elsewhere on the dorsum, or about as impressed on some specimens with the posterolateral striae punctate. Prosternal lines or carinae in front of procoxae parallel; intercarinal space weakly convex. Elytra widest at middle with a weakly convex outline (1.03–1.04x the greatest elytral width), 2.50–2.67 x longer than pronotal length and broad; punctuation very weakly striate, not impressed towards midline, but sometimes forming punctate striae postero-apically or forming distinct grooves; midbasal stria or puncture present and may be weakly developed, broad and shallow. Male ventrite 5 not vaulted at middle. Median lobe of aedeagus in lateral view narrowing at posterior ¼ to apex and acute; in dorsal view, weakly parallel-sided and broad subrounded apex; flagellum present. Tarsomere 1 of male greatly enlarged.

**Comments.** *Maurodus occiduus* can be distinguished from most species of the genus by the bicoloured pronotum with a distinct spot in the anterolateral portion of the disc. The lack of a vaulted abdominal ventrite 5 in the male differentiates this species from the similar-looking *M. maculatus*. There is some variation on the punctuation and development of the antennal groove, but the groove is not as well developed as other members of the genus, and generally does not have a well-developed inner carina or ridge: this variation is present among specimens in the Haast area.

**Distribution.** South Island: WD, OL, FD.

**Etymology.** The specific epithet is derived from the Latin word *occiduus* meaning west, referring to its distribution in the South Island.

**Type material examined.** Holotype (AMNZ): male [mounted on card], “Waiho Gorge S Westland 15-1-25 [hand written on bottom card by ?C.E. Clarke] // C.E. Clarke Collection”. **Paratypes (25): South Island. WD/OL:** Haast Pass, 44.078195S, 169.386185E, 10.04.1979 [J. Nunn] (1, NZAC). **WD:** NC, Arthurs Pass, 860m, 14–23. iv. 1984, J.W. Early, Yellow pan trap in moss in Nothofagus solandri forest (1, LUNZ); 4 km N of Haast Pass, Fantail Falls 450m, 44.078195S, 169.386185E, leaf litter, 04.01.1984, P.M. Hammond (1, BMNH); 6 km SW Ma-



hitahi, 43.662571S, 169.577551E, swamp forest, 05.02.1984, P.M. Hammond (1, BMNH); S Westland, Waiho R, 43.422503S, 170.170088E, 12.01.1925, C.E. Clarke Collection (1, AMNZ); same except 13.01.1925 (1, BMNH); same except 14.01.1925 (2, BMNH); same except C.E. Clarke, G.V. Hudson (1, BMNH); same except 16.01.1925 C.E. Clarke (1, BMNH); S Westland, Waiho Gorge, 43.422503S, 170.170088E, 12.01.1925, C.E. Clarke Collection (1, AMNZ); same except 14.01.1925 (8, AMNZ); same except 16.01.1925 (1, AMNZ); Waiho R. V, 42.953168S, 170.829454E, forest litter, 06.02.1984, P.M. Hammond (1, BMNH); Mt Greenland, 42.953168S, 170.829454E, 08.01.1943, C.E. Clarke, C.E. Clarke Collection (1, BMNH; 1, AMNZ); same except 09.01.1943 (1, BMNH; 2, AMNZ).

***Maurodus ornatus* (Broun, 1910), comb. nov.**

(Figs 6D, 7A–E, H,I, 13E; map Fig. 21)

*Caccommolpus ornatus* Broun, 1910:77. Type locality: Waimarino.

**Diagnosis.** Body broadly oval and tricoloured; pronotum mostly black. Antennal groove well-developed with or without inner ridge; internal surface glabrous. Prosternal lines in front of procoxae parallel. Elytra with midbasal stria or puncture present; three maculae present with the anterior one and lighter and broader posterior one contacting at midline; microsculpture absent. Ventrites dark-coloured, with hypomera and epipleura bicoloured; male ventrite 5 not vaulted at middle. Legs light coloured to infuscate or black; tarsomere 1 of male not greatly enlarged.

**Description.** Length 3.2–3.8 mm (greatest depth 1.60–2.00 mm). Body broadly oval and tricoloured with head, most of the pronotum and part of the elytral macula and ventral surfaces light red to black; anterior edge of pronotum and hypomeron, most of the elytra and epipleura, mouthparts, antennae, hypomera, and abdominal ventrite 5 yellow, red to pale-coloured; elytra with three maculae, two darker ones anteriorly and laterally that may be solid black, and a larger lighter and broader one occupying the apical 2/3rds. Microsculpture absent. Clypeus finely or apunctate, trapezoidal, anterior margin nearly straight; frontoclypeal suture present, sometimes not meeting at midline, or absent, with lateral postclypeal lines present and well developed, medial weakly impressed or absent; vertex weakly or apunctate, sometimes stronger than clypeal punctures. Ratio of antennomere lengths: 1.1/.9/.9/1.0/.8/0.7/1.0/1.0/1.0/1.0/1.6. Antennal groove well-developed with or without inner ridge; internal surface glabrous. Pronotum transverse (2.00–2.20x wider than long), lateral margins at base not subparallel-sided and converging anteriorly; punctures non-uniform, coarse at base and progressively diffuse anteriorly, sometimes very weak to glabrous anteriorly and those at base stronger than elsewhere on the body. Prosternal lines or carinae in front of procoxae parallel; intercarinal space weakly convex. Elytra widest at basal 1/4 and broad (1.04–1.04x the greatest elytral width), 2.55–2.80 x longer than pronotal length; punctation absent to sparse and not striate and not impressed towards midline; midbasal stria or puncture present and often shallow. Male ventrite 5 not vaulted at middle. Spermatheca annulate, u-shaped and narrowed basally with a distinct duct and small basal gland; collum absent. Median lobe of aedeagus in lateral view gradually widening from basal ¼ to apex and broadly acute; in dorsal view, wider at base and subparallel-sided with a subacute apex; flagellum present. Tarsomere 1 of male not greatly enlarged.

**Comments.** Broun described *Caccommolpus ornatus* from a single specimen that we located in the BMNH. Despite his “exertions”, Broun collected two additional specimens that were also in the BMNH collected during January 1910. This species is transferred from *Caccommolpus* to *Maurodus* because the metaventrite has the subcoxal lines parallel to coxal cavity forming a narrow bead. *Maurodus ornatus* can be distinguished from most species of the genus by the presence of three distinctive-looking maculae on the elytra. It is also the only member of the genus present in the North Island and there are two collections from the South Island. The collections from the Ahuroa Forest Reserve north of Auckland and from Mt Te Aroha in the Bay of Plenty indicates that species may be more widely distributed.

**Distribution.** North Island: AK, WO, BP, TK, TO, RI, WA, WN. South Island: NN, SD.

**Type examined.** Holotype (BMNH): re-mounted on card with extracted aedeagus glued to front edge of card, “3154. [in Broun’s hand] // New Zealand. [red underline] Broun Coll. Brit. Mus. 1922-482. // Waimarino. Jany. 1909. [in Broun’s hand] // *Caccommolpus ornatus*—[in Broun’s hand] // *Aotearoanus ornatus* (Broun) det. M. Daccordi [printed] 1987 [in Daccordi’s hand]”.

**Additional material examined.** **North Island: AK:** Ahuroa Forest Reserve, 36.480157S, 174.601948E, 15.11.1983 (2, BMNH). **WO:** Whareorino Forest, Mangatoa Tk, 4 March 2012, M. Gimmel, R. Leschen, sifting lit-

ter and rotten wood, 38.24.985S, 174.43.312E, RL1673 (1, NZAC). **BP:** Mt Te Aroha, below summit, 37.534585S, 175.741289E, *Nothofagus menziesii*, 24.11.1991, R.C. Henderson (1, NZAC); Mt Te Aroha, summit, 37.533479S, 175.742380E, Litter 92/6, 27.02.1992, J.S. Dugdale (1, NZAC); Mt Te Aroha, 600–800m, 37.533479S, 175.742380E, leaf litter, 12–13/11/1983 (2, BMNH); Mt Te Aroha, smt, 950m, 37.533479S, 175.742380E, 20.03.2002, S.E. Thorpe (1, AMNZ). **TO:** Turangi, Ponanga Sdle, 39.004993S, 175.746596E, in forest litter, 13.07.1996 J. Nunn (2, NZAC); Waituhi Saddle, 38.863625S, 175.546509E, leaf litter moss and rotten wood 83/112, 16.11.1983, C.F. Butcher (1, NZAC). **TK:** Egmont NP, Dawson Falls, 950m, 39.322609S, 174.105127E, forest litter, 06.12.1983 (1, BMNH); Mt Taranaki, 710m, 39.322609S, 174.105127E, pitfall trap, 14 Jan–11 Feb 2004, I.A.N. Stringer (1, AMNZ); same except Dawson Falls 760m (1, AMNZ); Egmont NP, Stratford Mountain House, 850m, 25.xii, 1994, R.M. Emberson & P. Syrett, on mossy logs and trees at night, kamahi/totara forest (2, LUNZ). **RI:** Mataroa, Paengaroa SR, 540m, 39.647239S, 175.721338E, RL1106, 30.03.2006, T.R. Buckley, M. Seldon, R. Hoare (1, NZAC); Waimarino, 39.438167S, 175.128888E, 00/1/1910, 3154 Broun Collection, (2, BMNH). **WA:** Aorangi Ra, Sutherland Vehicle Tk, 41.411346S, 175.362242E, secondary forest on former grazing land KM245, sifted wood and leaf litter, 24.01.2008, K. Marske, R. Leschen, T. Buckley (1, NZAC); S.E. Puketoi Ra, Castlehill, Huanui area, 40.720401S, 175.960162E, 01.03.2010, J. Nunn (1, NZAC). **WN:** Tararua Ra, Dundas Hut Ridge, 1010m, 40.714403S, 175.464441E, Litter and moss 84/80, 29.11.1984, J.S. Dugdale (1, NZAC); Tararua Ra, Logan, 1490, 40.720329S, 175.456846E, swards, moss plants, 84/91 02.12.1984, J.S. Dugdale (1, NZAC); Tararua Ra, E. Basin Logan, 1300m, 40.720329S, 175.456846E, turf plants 84/96, 06.12.1984, R.C. Craw (2, NZAC); Tararua Ra, Mt Dundas, 1500m, 40.716396S, 175.465994E, Litter and mixed swards 85/8, 09.02.1985, G.W. Ramsay (3, NZAC); Tararua Ra, Mt Dome, 40.712526S, 175.474256E, Moss liverworts and mixed plants 85/10, 10.02.1985, G.W. Ramsay (6, NZAC); Tararua Ra, Dundas Ridge, 1430m, 40.714403S, 175.464441E, mixed swards 85/23, 13.02.1985, C.F. Butcher (5, NZAC); Tararua Ra, Mt Pukemoremore, 1474m, 40.710552S, 175.467613E, mixed swards 85/30, 12.02.1985, C.F. Butcher (1, NZAC); Tararua FP, Waiotauru, 40.938835S, 175.184549E, 02.06.2000 E. Spurr (1, NZAC); same except 08.08.2000 (1, NZAC); Tararua FP, Akatarawa Sdle, 40.948363S, 175.108237E, 9/84 Litter, 17.01.1984, H.P. McColl (1, NZAC); Karori Wildlife Sanctuary, 41.306153S, 174.740593E, KR09, 26 Nov–13 Dec 1998, C.H. Watts (2, NZAC); same except 1–27 Mar 2007 (1, NZAC); same except 14 Dec 2004–20 Jan 2005 (1, NZAC); same except KR10, 1–27 Mar 2007 (2, NZAC); Karori Reservoir, 41.305419S, 174.750368E, 30.06.1997, [J.Nunn] (3, NZAC); same except 30.03.1997 (3, NZAC); Karori Reservoir, 41.305419S, 174.750368E, in thick moss on fallen pine, 17.10.1994 [J.Nunn] (1, NZAC); same except 10.04.1997 (2, NZAC); same except in wet forest litter, 13.04.1997 (1, NZAC); same except 14.04.1997 (2, NZAC); same except Base of sedge, 31.03.1997 (1, NZAC); same except in sedge litter, 06.04.1997 (1, NZAC); same except in hinau litter, 07.04.1997 (1, NZAC); same except in moss and humus on tree trunk, 30.03.1997 (2, NZAC); Khandallah Domain, 41.246147S, 174.794493E, Leaf litter, 05.04.1994, [J.Nunn] (1, NZAC); same except in streamside gravel, 06.09.1994 (1, NZAC); same except in woodmould base of kohekohe, 25.04.1995 (1, NZAC); Tararua FP, Field Hut, 40.907866S, 175.256189E, leaf litter, 01.01.1993 [J.Nunn] (1, NZAC); Tararua FP, Kakanui, 40.964517S, 175.135904E, 21.08.1978 [J.Nunn] (1, NZAC); Kaitoke Regional Park, Pakuratahi Forks, 41.056386S, 175.191350E, leaf litter RL985, 15.04.2005, R. Leschen, C. McGuinness (1, NZAC); same except 24.07.1993 [J.Nunn] (1, NZAC); Tararua FP, 4km along Waiotauru Rd, 40.885396S, 175.214182E, 16.11.1991 [J.Nunn] (1, NZAC); Akatarawa Rd, Smt, 40.948319S, 175.108176E, leaf litter, 27.03.1983 [J.Nunn] (1, NZAC); same except 12.05.1995 (1, NZAC); Tararua FP, Waitewaewae Tk, 40.874474S, 175.240992E, in moss at Otaki River Bridge, 29.11.2005 [J.Nunn] (1, NZAC); Featherston, 41.107568S, 175.321306E, 19.09.1916, 3154 Broun Collection (1, BMNH); Wadestown 41.262907S, 174.773763E, 21.03.1916 (1, BMNH); Rona Bay, 41.288245S, 174.904495E, 20.04.1937, G.V. Hudson (1, BMNH). **No locality:** Sharp Collection 1905, 313 (1, BMNH). **South Island:** **NN:** Kaituna Tk, 4 Dec 2018, 40 42.807S, 172 34.434E, sifting moss, R Leschen, V. Sykora, RL2060 (1, NZAC). **SD:** Mt Stokes Track, podocarp-beech (large-leafed) forest, 11 Dec 2007, K. Marske, J. Allwood, sifted leaf litter, S 41.05.215°, E 174.08.130°, 587m, KM106 (2, NZAC).

***Maurodus owenensis*, sp. nov.**

(Figs 8A,B; map Fig. 19B)

**Diagnosis.** Body broadly oval and tricoloured; pronotum bicoloured. Antennal groove well-developed with inner ridge; internal surface glabrous. Prosternal lines in front of procoxae parallel. Elytra with midbasal puncture present;

maculae broad with outer edges sinuate and contacting broadly at midline; microsculpture absent or weakly impressed. Ventriles dark-coloured, with hypomera bicoloured and epipleura uniformly white-coloured. Legs unicoloured black.

**Description.** Length 3.7 mm (greatest depth 1.8 mm). Body broadly oval and tricoloured with head, most of the pronotum, midbasal puncture, ventral surfaces, mouthparts, and legs black; antennae, anterior portion of pronotum and hypomera, epipleura, abdominal ventrite 5 yellow-orange; elytral maculae deep to yellow orange with darker margins and sinuate along lateral edge. Microsculpture indistinct. Clypeus very weakly punctate, trapezoidal, anterior margin straight; frontoclypeal suture present with weak medial line and well-developed lateral postclypeal lines; vertex very weakly punctate. Ratio of antennomere lengths: 1.1/0.8/0.9/0.7/0.6/0.6/0.7/0.8/0.9/0.9/1.1. Antennal groove well-developed with inner ridge; internal surface glabrous. Pronotum transverse (2.75 x wider than long), lateral margins, converging anteriorly; punctures non-uniform, coarse at base and progressively diffuse anteriorly, those at base as strong as those contained in the elytra striae. Prosternal lines or carinae in front of procoxae parallel; intercarinal space flat. Elytra widest at basal 1/3 and broad (1.11x the greatest elytral width), 3.62x longer than pronotal length; punctation moderately striate, more impressed at center of elytral disc; midbasal puncture shallow.

**Comments.** This new species most closely resembles *M. lepidus* but can be distinguished from it by the colouration and the shape of the prothorax which is less convex at the sides and less convergent anteriorly. The type locality, Mt. Owen, is accessible by walking, and additional attempts should be made to collect more material. The single specimen was not dissected.

**Distribution.** South Island: NN.

**Etymology.** The specific epithet is derived from the place name, Mt Owen.

**Type examined.** Holotype (AMNZ); not sexed [originally card mounted but removed and pointed], "Mt Owen Nelson 13-3-38 C.E. Clarke // C.E. Clarke Collection" [41.552011S, 172.541345E].

### ***Maurodus plagiatus* (Sharp, 1886), comb. nov.**

(Figs 8C–F; map Fig. 19B)

*Caccommolpus plagiatus* Sharp, 1886:448. Type locality: Greymouth.

**Diagnosis.** Body oval and bicoloured; pronotum unicoloured. Antennal groove weakly developed with inner ridge scarcely indicated; inner surface weakly glabrous. Prosternal lines in front of procoxae parallel. Elytra with midbasal stria present; maculae present in basal 2/3 with outer edges sinuate and contacting at midline and not extending to tip of elytra; microsculpture strongly impressed. Ventriles mostly light coloured and weakly infusate, with anterior portion of hypomera and entire epipleura pale-coloured; male ventrite 5 not vaulted at middle. Legs bicoloured with femora and tibiae infusate; tarsomere 1 of male greatly enlarged.

**Description.** Length 3.3–3.5 mm (greatest depth 1.70 mm). Body oval and bicoloured with head, elytral macula, and middle portions of the prosternal process, meso-, and metaventrite black or dark-coloured the rest of the body orange, yellow or pale-coloured; elytral maculae sinuate along lateral edge. Microsculpture distinct, present on pronotum and elytra. Clypeus very weakly punctate or apunctate, more or less trapezoidal, anterior margin straight; frontoclypeal suture present and not meeting at midline or absent, lateral postclypeal lines present and well developed, medial line absent; vertex apunctate. Ratio of antennomere lengths: 0.8/0.4/0.6/0.7/0.6/0.5/0.6/0.5/1.0/0.8/1.1. Antennal groove weakly developed with inner ridge scarcely indicated; inner surface weakly glabrous. Pronotum transverse (2.22–2.50 x wider than long), lateral margins at base not parallel-sided and sides converging anteriorly, not strongly convex; punctures non-uniform, coarse at base and progressively diffuse anteriorly, those at base stronger than elsewhere on the body or about as coarse as they are at the posterolateral disc of the elytron. Prosternal lines or carinae in front of procoxae parallel; intercarinal space flat. Elytra widest at basal 1/3 and broad (1.08x the greatest elytral width), 2.89–3.12 x longer than pronotal length; punctation very weakly striate and not impressed towards midline or moderately striate; midbasal stria present and shallow. Tarsomere 1 of male greatly enlarged. Male ventrite 5 not vaulted at middle.

**Comments.** Sharp received one specimen of this species from Reitter, which we located in the BMNH and confirmed its status as the holotype (Fig. 8F). This species is transferred from *Caccommolpus* to *Maurodus* because the subcoxal lines on abdominal ventrite 1 are parallel to coxal cavities. *Maurodus plagiatus* can be distinguished from

most species of the genus by the unicoloured pronotum and epipleura and the presence of elytral maculae that are present in the basal 2/3 of the elytra that distinguishes this species from *M. supernus*.

**Type examined.** Holotype (BMNH): remounted on point with removed abdomen and female terminalia on acetate card, “Cacomolpus plagiatus Type D. S. Greymouth, N. Z<sup>d</sup> [in Sharp’s hand; top of original card trimmed] // Type H.T. [round label with red border] // Sharp Coll. 1905-313. // Aotearoanus plagiatus (Sharp) [handwritten] det. M. Daccordi [printed] 1987 [in Daccordi’s hand]”.

**Additional material examined. South Island. NN:** Oparara Basin, Oparara Arches Track, mixed *Nothofagus* and podocarp forest, 30 Jan 2012, R. Leschen, sifted rotten wood, 41.149821S, 172.189917E, RL1642 (1, NZAC). **BR:** Fletcher Creek, 6 km SW Rotokohu, 41.982710S, 171.846460E, litter 71/125, 09.11.1971, J.S. Dugdale (1, NZAC); Nile River valley, moss berlesate, 1.ix.1971, R.M. Emberson (1, LUNZ).

### ***Maurodus supernus*, sp. nov.**

(Fig. 9, 12I,J, 13F; map Fig. 19B)

**Diagnosis.** Body broadly oval and bicoloured; pronotum unicoloured. Antennal groove not well demarked by ridges. Prosternal lines in front of procoxae convergent. Elytra with midbasal stria or puncture present; maculae broad with outer edges sinuate and contacting broadly at midline and extending to tip of elytra; microsculpture absent. Ventrites dark-coloured and infuscate, with hypomera and epipleura uniformly pale-coloured; male ventrite 5 not vaulted at middle. Legs unicoloured yellow to weakly infuscate and bicoloured; tarsomere 1 of male not greatly enlarged.

**Description.** Length 3.5–4.4 mm (greatest depth 1.80–1.90 mm). Body broadly oval and bicoloured with head, elytral macula, and middle portions of the ventral surfaces black or dark-coloured; elsewhere orange, yellow to pale-coloured; elytral maculae sinuate along lateral edge and extending to tip of elytra; femora and tibiae unicoloured yellow to weakly infuscate. Microsculpture present on head, weakly to well-developed on pronotum and absent on elytra. Clypeus weakly or apunctate, nearly trapezoidal, anterior margin straight; frontoclypeal suture present sometimes weakly-impressed, lateral postclypeal lines present and well-developed and medial line absent; vertex weakly or apunctate. Ratio of antennomere lengths: 1.0/.9/.8/.7/.7/.5/.7/.7/.7/.6/1.1. Antennal groove not well demarked by ridges. Pronotum transverse (2.30–2.33x wider than long), lateral margins at base not parallel-sided and sides weakly converging anteriorly, not strongly convex; punctures non-uniform, moderately or very coarse at base and progressively diffuse anteriorly, those at base usually more strongly impressed than elsewhere on the body, apart from the posterolateral margins of the elytra in some specimens. Prosternal lines or carinae in front of procoxae anteriorly convergent with the anterior width about 0.5x narrower than procoxal width; intercarinal space weakly convex. Elytra widest at middle with a weakly convex outline (1.03–1.04x the greatest elytral width), 2.50–2.67 x longer than pronotal length and broad; punctation generally very weakly striate, not impressed towards midline, sometimes more strongly impressed at posterolateral disc; midbasal stria present. Tarsomere 1 of male not greatly enlarged. Male ventrite 5 not vaulted at middle. Median lobe of aedeagus in lateral view with somewhat subparallel sides with apex subacute; in dorsal view, weakly parallel-sided, broader at base and rounded at apex; flagellum present.

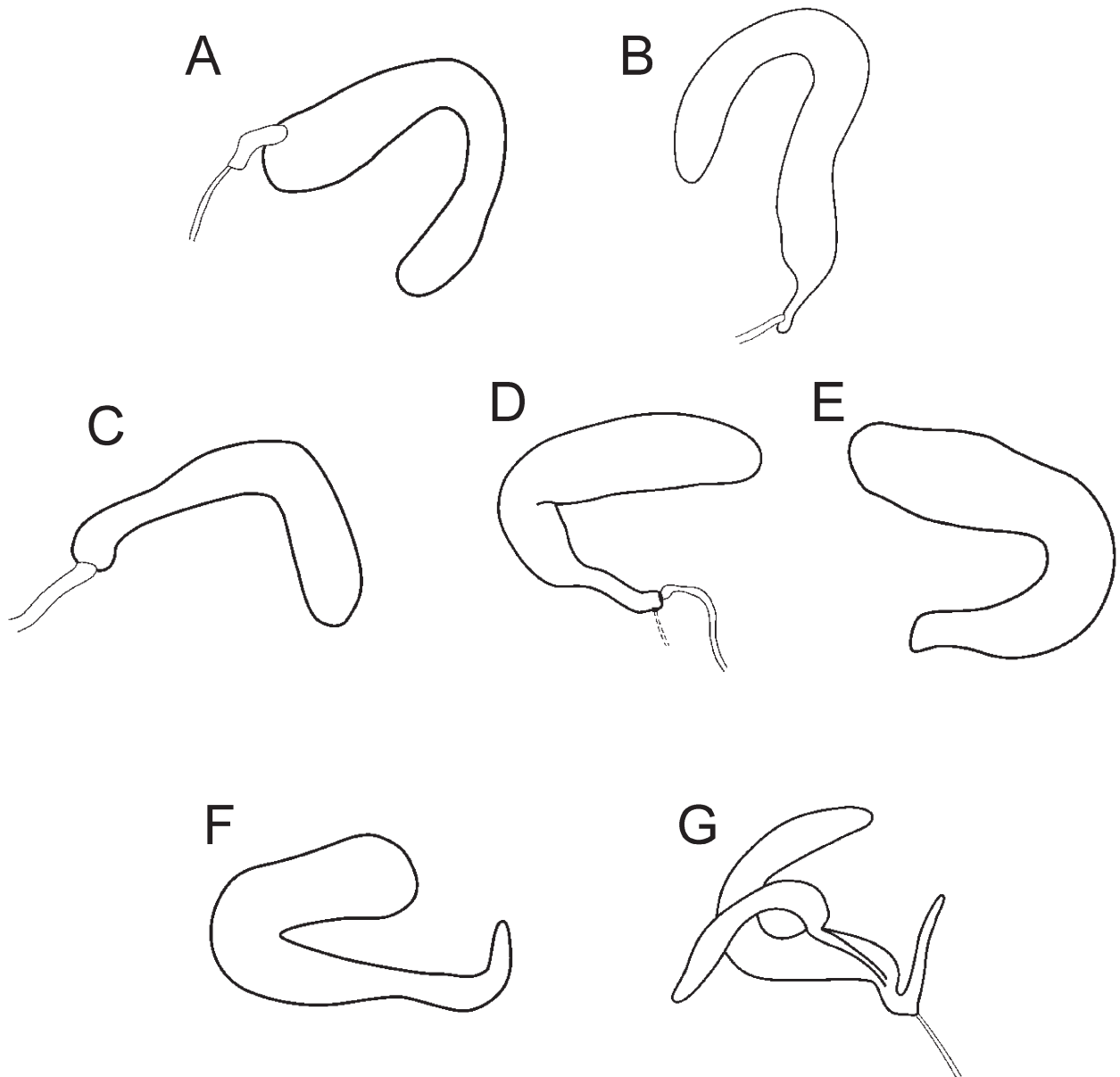
**Comments.** *Maurodus supernus* can be distinguished from most species of the genus by the unicoloured pronotum, glabrous dorsal surfaces, and lack of a well-developed antennal groove. It is most like *M. plagiatus*, but the elytral maculae do not extend posteriorly to near the tip of the elytra. Most specimens were collected early last century by C. E. Clarke (Fig. 9F), and we obtained one recently collected specimen from Takahe Valley we designated as the holotype.

**Distribution.** South Island: WD, FD.

**Etymology.** The specific epithet is derived from the Latin word *supernus* meaning on the top, referring to some specimens that were collected in the Southern Alps.

**Type examined.** Holotype (NZAC): “Takahe Valley, *Chionochloa teretifolia*, 30 Nov–8 Mar 2016, pitfall trap #, 45.2735475, 167.672021E, 1220 m, K. Paler.” **Paratypes (17): South Island: WD:** S Westland, Waiho R, 43.422503S, 170.170088E, 16.01.1925, C.E. Clarke Collection (1, AMNZ). **FD:** Upper Routeburn, 44.725249S, 168.215426E, 25.01.1926, C.E. Clarke Collection (1, AMNZ); same except 26.01.1926 (1, AMNZ; 2, BMNH); same except no date (1, BMNH); Routeburn R, 44.711028S, 168.258576E, 14.01.1926, C.E. Clarke, C.E. Clarke Collection (2, AMNZ); Routeburn R, 44.711028S, 168.258576E, 15.01.1926, C.E. Clarke Collection (2, AMNZ);





**FIGURES 13A–G.** Spermathecae of New Zealand Chrysomelinae; A, *Aphilon* sp.; B, *Caccommolpus* sp.; C, *Maurodus impressus*; D, *Maurodus cinctiger*; E, *Maurodus ornatus*; F, *Maurodus supernus*, aedeagus, lateral view; G, *Zeaphilon mirandum*. same except 16.01.1926 (2, BMNH; 3 AMNZ); same except C.E. Clarke (1, AMNZ); 24.01.1926 C.E. Clarke (1, AMNZ); Upper Takahe Valley, 12 Mar 2013, sifting *Clemisia*, tussocks, etc. litter, 45 16.356S, 167 37.250E, 1181.8m, R. Leschen RL1692 (1, NZAC); Fiordland NP, Murchison Mts, E. McKenzie Burn, 1140m, 7.xii. 1980, R.M. Emberson, C.A. Muir, Litter under Hebe scrub and ferns (1, LUNZ).

***Nanomela*, gen. nov.**

(Figs 10, 12A,B, 14–16)

Type species: *Nanomela tiniheke*, sp. nov.

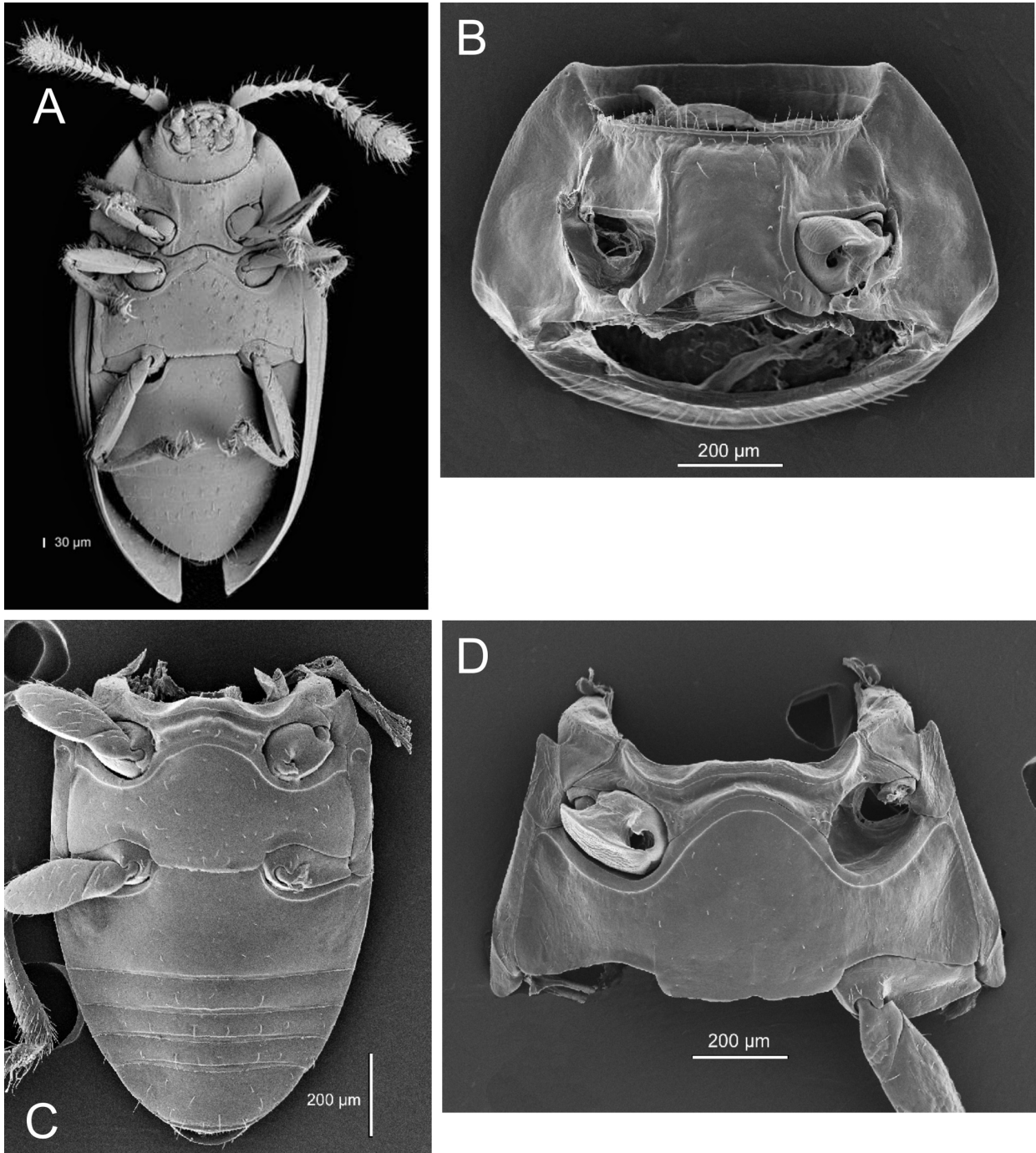
**Diagnosis.** Body length less than 2.5 mm; oval and moderately convex; colour generally uniform pale-yellow to dark brown, without metallic reflection. Antennae clavate. Procoxal cavities externally closed. Hindwings absent. Anterior edge of metaventricle curved or rounded; metaventral lines parallel and not extending to middle of ventrite. First abdominal ventrite with subcoxal lines parallel to coxal cavity and not extending to middle of ventrite.

**Description.** Length 1.3–2.3 mm. Body oval and moderately convex. Colour pale-yellow to dark brown, lacking metallic lustre.

Head forming a short muzzle with genae extending a short distance beyond level of antennal and maxillary insertions, scarcely visible from above with mouthparts directed anteroventrally, wide vertex or frons, nearly flat to feebly convex; postantennal calli absent, pale areas present or absent. Eyes reduced to 1 or 2 (mainland species) or 15 (Snares species) facets, not protuberant, though resting on a small hump in some species; inner margin of eye without a small seta. Antennae long and clavate, antennomeres relatively short, most about as long as wide, weakly thickened apically, scape short and somewhat elliptic, shorter than the A2+3 combined, last 2, 3 or 5 antennomeres forming a club, reaching just beyond the hind margin of the pronotum; eye not contacting antennal insertion, with distance between insertion and margin of eye equal to or less than diameter of insertion, distance between insertions about 2 times length of the scape. Clypeus trapezoidal and weakly to moderately transverse, anterior margin straight; frontoclypeal suture present; postclypeal lines absent. Labrum rectangular to squared, anterior margin weakly or not emarginated and sides rounded, surface with 1 elongate seta per side, anterior margin at middle lacking distinct setal fringe, tormae long and thin, about 2.5 times longer than labral plate. Mandible with terebral edge serrate. Maxillary palpus relatively short, palpomere 1 not strongly flattened about as long as wide, palpomere 2 shorter than wide, palpomere 3 about 2 times longer than wide or less, greater in length than palpomere 2, conical. Labium with wide ligula, almost equal in width to the lengths of palpomeres 1 and 2 combined, apex very weakly divided at apex, palpal insertions separated by less than the width of the basal palpomere, palpi relatively short, palpomere 1 shorter than long, palpomere as long as wide, palpomere 3 conical, twice longer than wide with truncated apex. Mentum rectangular and transverse, width of mentum equal to or shorter than the length of labial palpomere 3. Intermaxillary process short and extending a short distance anteriorly beyond maxillary insertions, anterior edge concave to straight, delimited behind by a ridge or a bead.

Pronotum transverse and convex, with a bead along anterior and lateral margins; posterior edge as wide as the base of elytra; anterior margin not emarginated, anterior angles weakly projecting and rounded to acute; sides distinctly converging anteriorly and straight or weakly curved, posterior margin weakly convex or sinuate; posterior angles rounded and not produced; disc convex without sublateral groove, trichobothria absent, coarse and dense punctures at middle of posterior margin absent (punctuation uniform); lateral carinae complete. Prosternum not vaulted at middle, without transverse notches in front of coxal cavities; prosternal lines present and parallel and extending a short distance forward and not reaching anterior edge of sternite; prosternal process broad, short and extending a short distance behind procoxae, expanded laterally behind coxae and contacting the hypomeral process; posterior margin emarginated, procoxal cavities externally closed. Notopleural suture distinct. Scutellary shield visible and small, triangular with acute apex. Elytra moderately convex, humeral calli and mid-basal striae absent; surface smooth, punctures weakly impressed and striate, epipleura narrow and well developed, visible in lateral view, apex without ctenidium. Hind wings absent. Mesoventrite mostly hidden in ventral view, posterior portion between mesocoxae visible as a narrow strip; mesal part of mesoventrite with vertical surface confluent with prepectus. Meso- and metacoxae widely separated. Metaventrite shorter than abdominal ventrite 1 at midline, mesocoxal process broad with a curved anterior margin, metaventral lines parallel, discal and transverse metaventral (metakatepisternal) suture absent. Metendosternite lacking stalk and laminae, widely spaced lateral arms lacking subapical anterior tendons. Legs with tibiae flattened in cross section, meso- and metatibiae not clubbed, gradually widened towards apex with evenly curved lateral margin, apically setose; tarsomeres 4-4-4 with tarsomeres 1–3 of equal or subequal lengths, T1 slightly longer than T2 or longer, about 1.1–1.3 times longer than wide (not greatly enlarged in male, but may be slightly more elongate than female), T2, T3 not deeply incised (bilobed), tarsomere 4 minute and fused to 5, T5 about 2–2.5 times as long as T3, claws simple.

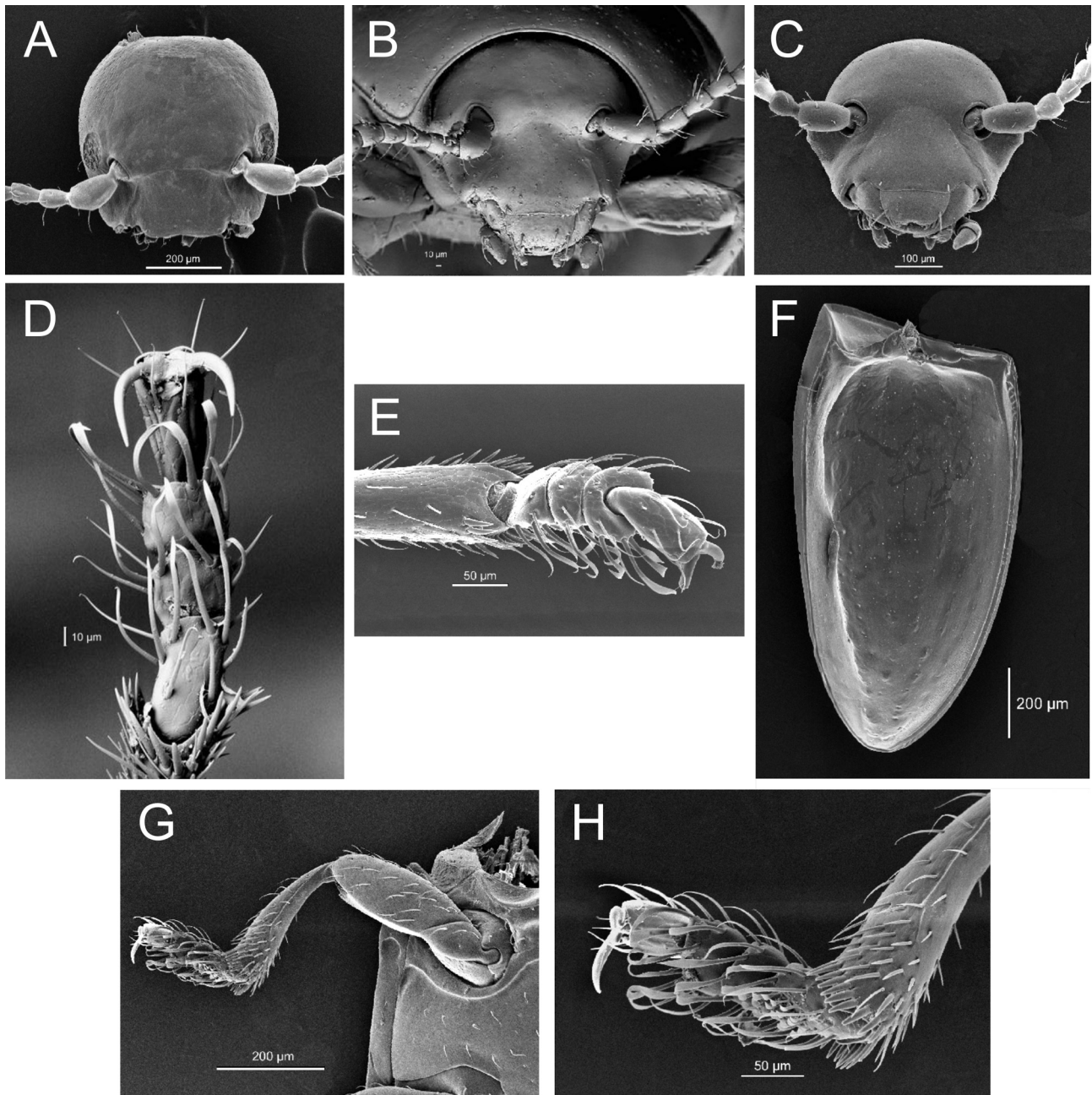
Abdominal ventrite 1 long, longer than ventrites 2–5 combined, with a broad metacoxal process that is wider than long and with a straight apical margin, ventrites 2–4 equal in length and much shorter than ventrite 1, ventrite 5 longer than ventrites 3 and 4 combined with rounded posterior margin; first abdominal ventrite with subcoxal lines parallel to coxal cavity that do not extend to middle of ventrite. Aedeagus variable, weakly curved in lateral view and dorsoventrally compressed in cross section; apex in dorsal view acute to arrow-shaped; flagellum. Ovipositer with coxite over 2 times longer than wide, stylus absent. Spermatheca U-shaped, collum present with spermathecal duct inserted onto base, spermathecal gland absent.



**FIGURES 14A–D.** Ventral SEMs of *Nanomela* spp.; A, *Nanomela* sp., body; B, *Nanomela* sp., prothorax; C, *Nanomela* sp., meso-, meta-, and abdominal ventrites; D, *Nanomela tiniheke*, meso- and metaventrite.

**Comments.** *Nanomela* is restricted to the South Island, Stewart Island, and subantarctic Snares Islands. Here we describe one species from the Snares, but the genus will require more detailed work because specimens tend to be rarely collected and morphologically similar, often with very subtle differences between localities. For example, sorting based on general colour (light tan to dark-brown and black) and general body shape (elytra that are broadly rounded to somewhat tapered, Figs. 12A,B) has revealed at least 4 species that may be sympatric in the southern portion of the South Island (Fiordland (FD), Central Otago (CO), Stewart Island (SI), and Southland (SL)) and allopatric populations from Mt. Robert (NN), Mt. Arthur (NN), Karamea (NN), Mt. Faraday (BR), and Arthurs Pass (NC). The male genitalia among these taxa are very similar with subtle differences in the apex and specimens from several South Island localities are probably conspecific, but these require genetic sequencing, dissection, and further sampling. We decided to include a description of these referred to as the “mainland group”.





**FIGURES 15A–H.** SEMs of *Nanomela* structures; A, *Nanomela tiniheke*, head, dorsal view; B, *Nanomela* sp., head, frontal view; C, *Nanomela* sp., head, frontal view; D, *Nanomela* sp., metatarsus, ventral view; E, *Nanomela* sp., male mesotarsus, dorsolateral view; F, *Nanomela* sp., left elytron, ventral view; G, *Nanomela* sp., male middle leg, anterior view; H, *Nanomela* sp., male middle leg, anterolateral view. Photo B by Sue Lindsay, Australian Museum.

Most specimens have been collected from leaf litter or moss, apart from one series from Karamea that were collected via soil washing (J. Nunn, pers. comm., 2017). Those from the Snares Islands have been collected from a variety of habitats. Two species have been collected in reasonable numbers from pitfall traps set in Takahe Valley, Fiordland during a period of 4 years indicating that species are habitat specialists, with one species at lower altitudes associated red tussock (*Chionochloa rubra*) and another at higher altitudes associated with snow tussock (*C. teretifolia*) (Poaceae).

The reduced eyes, head elongated anterior to antennae forming a short muzzle, simple unexpanded 3rd tarsomere and distinct body form of *Nanomela* will distinguish this genus from all other Chrysomelinae and renders it difficult to recognise as a member of this subfamily, for example it fails to identify from the key to subfamilies in



Reid (2000). However the mouthparts, ventral thoracic, modified male tarsal setae and genitalic characters are typical of Chrysomelinae. *Nanomela* may be most closely related to *Aphilon* which also has clavate or clubbed antennae, but *Nanomela* differs from it by the elliptical body form and reduced eyes. *Nanomela* and *Aphilon* have the head scarcely visible in dorsal view, subcoxal lines parallel to the coxal cavity on abdominal ventrite 1, and relatively flattened tibiae, characters which are also present to some degree in *Mauroodus*, *Zeaphilon*, and most *Caccommolpus*.

**Etymology.** The genus name is derived from “nanos” (ancient Greek—dwarf, midget) and “-mela”, body, a common ending in the names of Chrysomelinae genera. The new genus contains some of the smallest members of the subfamily worldwide.

**Distribution.** South Island, Stewart Island, Snares Islands.

***Nanomela tiniheke*, sp. nov.**

(Figs 10C, D, F, 12B, 14D, 15A, 16B, D; map Fig. 20B)

**Diagnosis.** Head relatively short and broad. Eye coarsely faceted and consisting of about 15 ommatidia. Antennae with antennomere 8 as large as 7th, distance between insertion and margin of eye less than diameter of insertion. Posterior margin of the pronotum trapezoidal. Elytra with 9 distinct, but weakly impressed striae. Aedeagus with median lobe acute and arrow-shaped.

**Description.** Length 2.0–2.3 mm. Body elongate-elliptic slightly dorsoventrally flattened (greatest depth 0.80–1.00 mm); entirely dark brown. Vertex wide, nearly flat, inner margin of eye without a small seta. Head relatively short and broad. Eyes small, short-elliptic, coarsely faceted and consisting of about 15 ommatidia. Frons short-trapezoidal, wider than long, anterior margin straight. Antennae with antennomere 8 as large as 7<sup>th</sup> (ratio of antennomere lengths: 0.9/0.6/0.5/0.4/0.5/0.4/0.4/0.5/0.5/.0.5/1.0), distance between insertion and margin of eye less than diameter of insertion. Pronotum transverse (1.50–1.80 x wider than long), posterior margin of pronotum trapezoidal, lateral sides of posterior margin nearly straight, not strongly rounded medially. Elytra elongate (4.40–4.50 x longer than pronotal length) and broad (4.40–4.50 x the greatest elytral width); punctation striate, punctures arranged in 9 striae, epipleura moderately wide, flat, distinctly inclined, visible in lateral view. Spermatheca with short and thick collum and receptacle, strongly curved, collum with acute apex, duct very short. Median lobe of aedeagus with large and rounded basal opening, medial third gradually and gently widened towards apex, apex distinctly arrow-shaped (triangular and acute), median lobe inside with long and thin flagellum that straight in apical third and curved in basal two thirds.

**Comments.** Differs from mainland *Nanomela* spp. by the shorter and wider head, larger eyes with more facets, the posterior margin of pronotum is not evenly rounded with lateral sides of posterior margin nearly straight and medially not strongly rounded, the elytral apices are narrower and more elongate, and the spermatheca has an acute collum and a short duct.

**Distribution.** The Snares Islands.

**Etymology.** The species name derives from Tini Heke, the Māori name for the Snares Islands (feminine).

**Type material examined.** Holotype (AMNZ): sex not determined, “NZ: THE SNARES Broughton I, 30.xi.1976, JW Early, litter of *Stilbocarpa robusta* L7996”. Paratypes (36). SN: Snares Is, Broughton I, 48.043056S, 166.620833E, in litter of *Stilbocarpa robusta*, 04.11.1972, D.S. Horning (1, AMS; 1, NZAC); Snares Is, E end Sinkhole Flat, Penguin Colony, 48.016667S, 166.533333E, in peat of *Stilbocarpa robusta* at colony edge, 04.12.1974, D.S. Horning (2, NZAC); same except 03.12.1974 (1, NZAC); Snares Is, Sinkhole area, 48.01894S, 166.60230E, *Olearia lyalli* litter, 27.01.1971 D.S. Horning (1, NZAC); same except *Stilbocarpa robusta* foliage, 24.01.1971, D.S. Horning (3, AMS; 2, NZAC); same except 25.01.1971, *Olearia lyalli*, Tullgren [funnel] from leaf litter (1, AMS; 1, ANIC); Snares Is, nr Station Pt, 48.02290S, 166.60959E, *Olearia lyalli* forest logs, 9.1.67 P.M. Johns (2 AMS; 1, ANIC; 1; LUNZ; 3, NZAC); Penguin Ck, 26.10.1972 DS Horning, in wet litter *Olearia lyalli* (1, ANIC); Snares Is, S. Side Goat Harbour, 48.016667S, 166.533333E, litter of *Senecio stewartiae*, 26.03.1972, C.J. Horning (1, NZAC); Snares Is, Broughton I, 48.043056S, 166.620833E, JW Early litter of *Stilbocarpa robusta* L7996, 30.xi.1976 (12, AMNZ); same except litter of *Stilbocarpa robusta* L8913, 14.i.1977 (1, AMNZ).

### *Nanomela* mainland group

(Figs 10A,B,E, 12A, 14A-C, 15B,C, 16A,C,E)

**Diagnosis.** Head relatively long and narrow. Eye consisting of a one to two ommatidia. Antennae with antennomere 8 smaller than 7th, distance between antennal socket and margin of eye is equal to diameter of socket. Posterior margin of the pronotum evenly rounded. Elytra with 7 distinct, but weakly impressed striae. Aedeagus with median lobe subrounded to weakly arrow-shaped.

**Description.** Length 1.30–1.55 mm. Body widely-elliptic to somewhat narrowed, slightly dorsoventrally flattened (greatest depth 0.60–0.80 mm); entirely reddish-brown. Vertex very wide, feebly convex, inner margin of eye without a small seta. Head relatively long and narrow. Eyes very small, round, consisting of 1 large ommatidium. Frons large and elongate-trapezoidal, nearly as long as wide, anterior margin straight. Antennae with antennomere 8 smaller than 7<sup>th</sup> (ratio of antennomere lengths variable but generally: 0.6/0.3/0.3/0.3/0.3/0.2/0.3/0.3/0.4/0.5/0.8), distance between insertion and margin of eye is equal to diameter of insertion. Pronotum transverse (1.50–1.80 x wider than long), posterior margin of pronotum evenly rounded. Elytra elongate (2.87–3.33 x longer than pronotal length) and narrow (1.36–1.64 x the greatest elytral width); punctation striate, punctures arranged in 7 striae, epipleura narrow to moderately wide, flat, weakly inclined, feebly visible in lateral view. Spermatheca with rather short and thick collum and nodulus, strongly curved, collum with obtuse apex, duct comparatively long. Median lobe of aedeagus in ventral view straight, basal opening narrower than apical opening, the lobe gradually narrowed from apex to base, apical fourth widened, apex subrounded, median lobe inside with long, straight, and thin flagellum that curved in basal third.

**Comments.** These species differ from *Nanomela tiniheke* by the head which is longer and narrower, with an elongated frons, the eyes smaller with fewer facets, the pronotal posterior margin evenly rounded, the elytral apices wider and not elongate, and the spermatheca with an obtuse collum and long duct.

**Distribution.** South Island and Stewart Island.

### *Zeaphilon*, nov. gen.

(Figs. 11, 12K,M, 13G)

Type species: *Z. mirandum*, sp. nov.

**Diagnosis.** Body length greater than 2.5 mm; elliptical and moderately convex; colour uniform black to dark reddish brown, some specimens with a violet metallic reflection. Antennae clavate or subfiliform. Procoxal cavities externally open. Hindwings present but reduced (brachypterous). Anterior edge of metaventricle curved; metaventral lines parallel and not extending to middle of ventrite. First abdominal ventrite with subcoxal lines parallel to coxal cavity and not extending to middle of ventrite.

**Description.** Length 2.6–3.8 mm. Body elliptical and moderately convex. Colour uniform black to dark reddish brown, rarely with metallic sheen.

Head not forming a short muzzle with genae extending a short distance beyond level of antennal and maxillary insertions, scarcely visible from above with mouthparts directed anteriorly, wide vertex or frons, nearly flat to feebly convex; postantennal calli present but developed, pale areas present or absent; antennal grooves absent. Eyes relatively well-developed, somewhat protuberant, coarsely faceted and consisting of over 30 ommatidia; inner margin of eye without a small seta. Antennae long and clavate or subfiliform, scape elliptical or barrel-shaped, shorter than A2+3 combined, last five antennomeres forming a weak or a distinct club, reaching beyond the hind margin of the pronotum; eye almost contacting insertion, with distance between insertion and margin of eye about length of two ommatidia, distance between insertions about 3–5 times length of the scape. Clypeus trapezoidal, anterior margin straight; frontoclypeal suture present; postclypeal lines present, medial postclypeal line absent. Labrum somewhat rectangular and distinctly transverse, anterior margin weakly emarginated and sides rounded, surface with 3 setae per side, anterior margin at middle lacking distinct setal fringe, tormae long and thin, about 2 times longer than labral plate. Mandible with terebral edge simple. Maxillary palpus relatively short, palpomere 1 about as long as wide, palpomere 2 transverse and shorter than wide, palpomere 3 about 2 times longer than wide, greater in length than palpomere 2, subacute. Labium with relatively wide ligula, about equal in width to the lengths of palpomeres 1

and 2 combined, apex not divided at apex, palpal insertions separated by at least the width of the basal palpomere, palpi relatively short, palpomere 1 quadrate, palpomeres 2 and 3 slightly longer than wide, palpomere 3 subacute. Mentum rectangular and transverse, width of mentum shorter than the length of labial palpomere 3. Intermaxillary process short and not extending anteriorly far beyond maxillary insertions, delimited behind by a sulcus.

Pronotum transverse and convex, with a bead along anterior and lateral margins; posterior edge as wide as the base of elytra; anterior margin emarginated, anterior angles projecting and rounded; sides distinctly converging anteriorly and straight or curved, posterior margin weakly convex; posterior angles acute; disc moderately convex without sublateral groove, trichobothria absent, punctation not uniform with coarse and dense punctures at base and nearer to posterior margin; lateral carinae complete. Prosternum vaulted at middle, without transverse notches in front of coxal cavities; prosternal lines present and convergent anteriorly, extending forward almost reaching anterior edge of sternite; prosternal process broad, short and extending a short distance behind procoxae, expanded slightly behind coxae but not contacting the hypomerall process, posterior margin curved; procoxal cavities externally open. Notopleural suture distinct. Scutellary shield visible and relatively small, semicircular with a rounded apex. Elytra strongly convex, humeral calli absent or weakly demarcated by a shallow impression; midbasal stria present or absent; surface smooth, punctures weakly impressed and weakly striate, epipleura wide and well developed, visible in lateral view, apex without ctenidium. Hindwings present but reduced (brachypterous). Mesoventrite mostly hidden in ventral view, posterior portion between mesocoxae visible as a narrow strip; mesal part of mesoventrite with vertical surface confluent with prepectus. Meso- and metacoxae widely separated. Metaventrite equal in length to abdominal ventrite 1 at midline, mesocoxal process very short and broad with a curved anterior margin, metaventral lines parallel and not extending to middle of ventrite; discrimen absent and transverse metaventral (metakatepisternal) suture present, crossing the midline as a weakly impressed line. Metendosternite lacking stalk and laminae, widely spaced lateral arms with subapical anterior tendons. Legs with tibiae flattened in cross section, meso- and metatibiae not clubbed and gradually expanded before apex and flattened with evenly curved lateral outline, apically setose; tarsomeres 5-5-5 with tarsomere 1 about 2 times longer than T2 (enlarged in male), 1.5–2.0 times longer than wide, T2 slightly wider than long and as wide as T1, T3 slightly longer than wide and incised (bilobed), tarsomere 4 minute, T5 about twice as long as T3, claws appendiculate or weakly so.

Abdominal ventrite 1 long, but shorter than ventrites 2–5 combined, with a broad metacoxal process that is wider than long and with a straight apical margin, ventrites 2–4 equal in length and shorter than or equal to ventrite 1, ventrite 5 longer than ventrites 3 and 4 combined with rounded posterior margin; first abdominal ventrite with subcoxal lines parallel to coxal cavity that do not extend to middle of ventrite. Aedeagus weakly curved in lateral view and dorsoventrally compressed in cross section; apex in dorsal view square-edged and may be notched; flagellum present. Ovipositor with coxite 2 times longer than wide, stylus absent. Spermatheca curved, C-shaped, collum present with spermathecal duct inserted onto base, accessory and spermathecal glands present and sclerotized.

**Comments.** This endemic genus contains two species, both living at ground level and collected by sifting leaf litter or rotten wood. Recent field collecting focussing on sifting forest-dwelling mosses indicates that these species may be moss specialists. They are easily separated from other endemic genera by having a vaulted prosternum and brachyptery. In some respects species of *Zeaphilon* are similar to *Maurodus*, but having the coarse basal pronotal punctures similar to those present in *Aphilon* and having parallel metaventral lines as in *Nanomela* which can also separate the genus from the similar looking Australian genera *Canobolas* Reid, Jurado-Rivera & Beatson and *Geomela* Lea.

**Etymology.** A neuter name that combines the first two letters of “Zealand” with the name “*Aphilon*”.

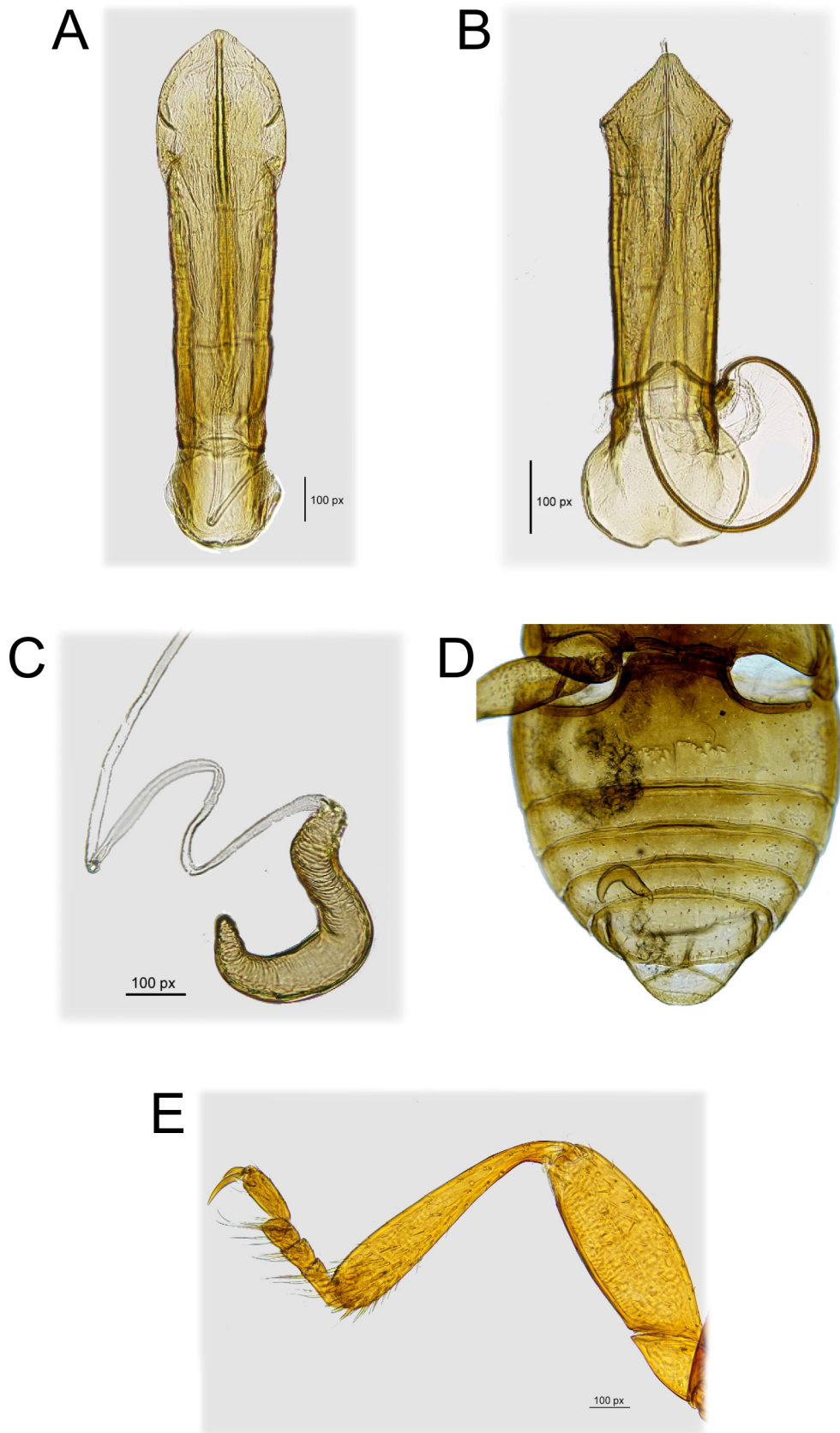
**Included species.** *Zeaphilon marskeae*, sp. nov.; *Z. mirandum*, sp. nov.

**Distribution.** North Island, South Island.

### ***Zeaphilon marskeae*, sp. nov.**

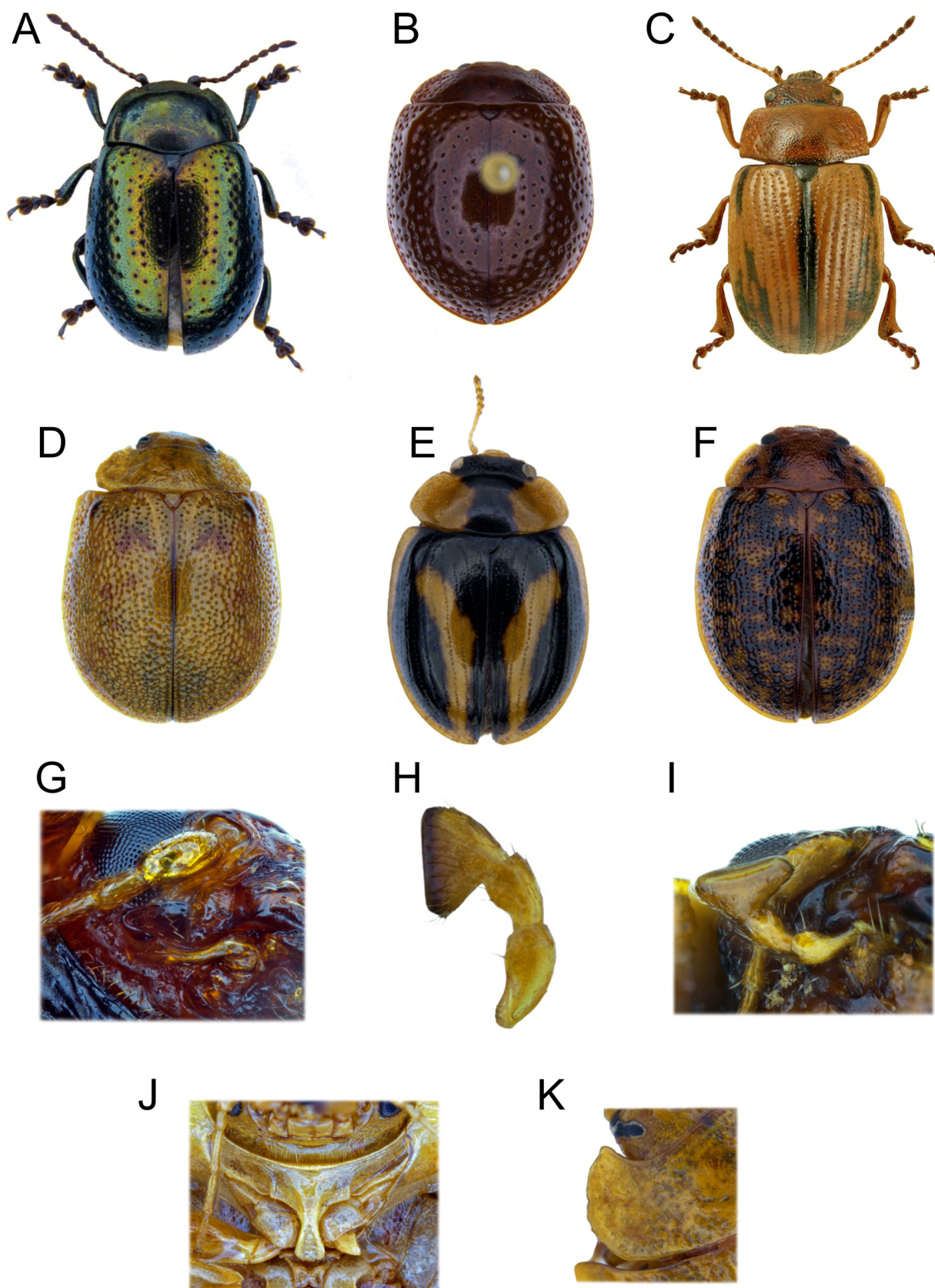
(Figs 11A–C, 12K,L; map Fig. 20B)

**Diagnosis.** Body broadly oval with abdomen narrowing posteriorly at apical 1/3. Pronotal margins at base more or less straight-sided. Elytron with midbasal stria present and well-impressed. Lateral margin of metaventrite with well-developed bead.

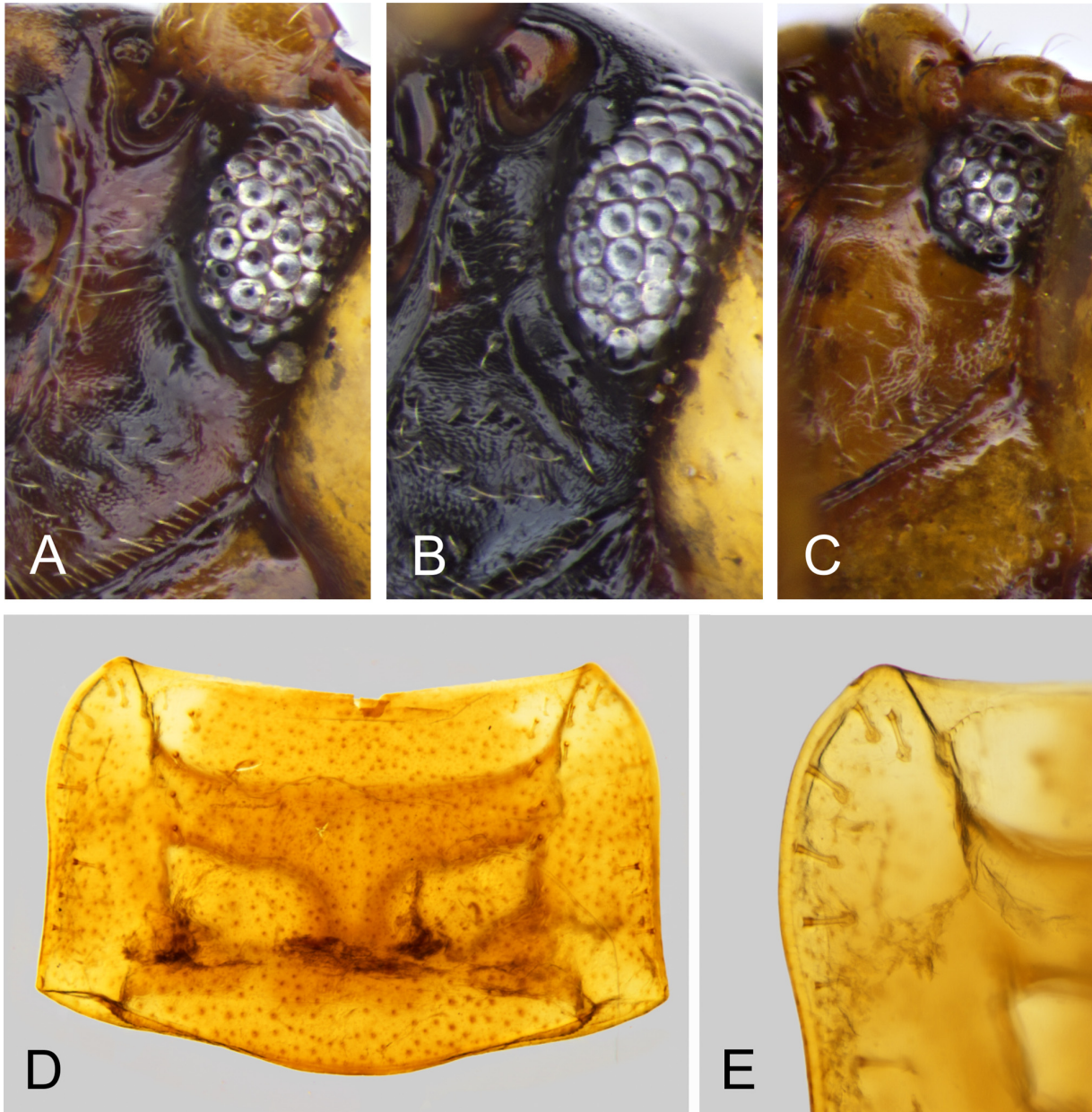


**FIGURES 16A–E.** *Nanomela* structures; A, *Nanomela* sp., aedeagus, dorsal view; B, *Nanomela tiniheke*, aedeagus, dorsal view; C, *Nanomela* sp., spermatheca; D, *Nanomela tiniheke*, abdomen showing spermatheca, ventral view; E, *Nanomela* sp., hindleg, posterior view.





**FIGURES 17A–K.** Dorsal habitus of introduced chryomelinae and their structures; A, *Chrysolina hyperici*, length 5.5 mm; B, *Dicranosterna semipunctata*, length 9.9 mm; C, *Goniocтена olivacea*, length 3.4 mm; D, *Paropsis charybdis*, length 10.3 mm; E, *Peltoschema mansueta*, length 3.2 mm; F, *Trachymela sloanei*, length 8.0 mm; G, *Dicranosterna semipunctata*, lateral view of maxillary palpus; H, *Paropsis charybdis*, ventral view of maxillary palpus; I, *Trachymela sloanei*, ventral view of palpus; J, *Paropsis charybdis*, ventral view of prosternum; K, *Paropsis charybdis*, left lateral view of pronotum.



**FIGURES 18A–E.** Subantennal grooves (ventral view of heads, A–C) and prothoracic glandular ducts. A, *Maurodus cinctiger*; B, *Maurodus lepidus*; C, *Maurodus maculatus*; D, *Chalcolampra* sp., dorsal view through cleared prothorax; E, same, detail.

**Description.** Length 2.6–2.9 mm (greatest depth 1.20–1.40 mm). Body broadly oval and unicoloured black without metallic sheen; antennae, mouthparts, legs and ventral surfaces dark brown. Microsculpture absent dorsally, present ventrally; abdominal ventrites with scattered punctures. Clypeus finely punctate, anterior margin more or less straight; frontoclypeal suture present with medial and lateral postclypeal lines present; vertex finely punctate. Ratio of antennomere lengths: 1.1/0.6/0.6/0.7/0.7/0.6/0.7/0.9/0.8/0.8/1.2. Pronotum transverse (2.0x wider than long), lateral margins at base more or less straight-sided and sides weakly converging anteriorly, not strongly convex in outline; punctures coarse at base and progressively diffuse anteriorly, those at base stronger than elsewhere on the body. Prosternal lines or carinae in front of procoxae anteriorly convergent with the anterior width about 0.5x narrower than procoxal width; intercarinal space not convex. Elytra widest at middle, narrowing posteriorly at apical 1/3 with a weakly convex outline (1.00–1.21x the greatest elytral width), 2.25–2.40x longer than pronotal length; punctation very faint and very weakly striate, not strongly impressed; midbasal stria present and well-impressed; epipleuron about 2.2x wider than metanepisternum. Lateral margin of metaventre with well-developed bead. Median lobe of aedeagus in lateral view evenly convex dorsally, somewhat broad with an acute apex; in dorsal view anteriorly notched and gradually widened towards the truncated apex.



**Comments.** *Zeaphilon marskeae* can be distinguished from *Z. mirandum* by its shape and the presence of a distinct midbasal stria.

**Distribution.** South Island: NN.

**Etymology.** The specific epithet is honorific for Katherine Marske, one of the collectors of this species.

**Type material examined.** Holotype (NZAC): sex not determined, “NEW ZEALAND MB Pelorus Bridge Scenic Reserve Totara Walkway 12 Dec 2007 K. Marske J. Atwood // Beech forest 17m Sifted beech litter & wood debris KM118 S 41.17.927 E 173 34.380. Paratypes (6) NN: Washbourne SR, SH60, 22m, 40.767689S, 172.707392E, mixed beech/ponga/exotica sifted wood and leaf litter KM166, 19.12.2007, K. Marske, J. Atwood (1 male on slide, NZAC); Pupu Hydro Walkway, 2 Dec 2018, sifting moss and litter, 40 51.338S, 172 44.300E, R Leschen, V. Sykora, RL2048 (1, NZAC); Canaan, 30km NW, Motueka, Tasman NP, 22–28 May 1982, 800m, 82-17, S. & J. Peck, for stump litter (2, ANIC). **MB:** Mt Richmond Forest Park, Brown River, beech forest along SH6, KM130, 13 Dec 2007, K. Marske, J. Allwood, hand-collected ex dead wood with fungus, S 41.12.614', E 173.34.757', 53m (1, NZAC); Pelorus Bridge, 9 Dec 2018, sifting moss, litter, and flood debris, 41 18.234S, 173 34.102E, R Leschen, V. Sykora, RL2079 (1, NZAC).

### *Zeaphilon mirandum*, sp. nov.

(Figs 11D–E, 12M,N, 13G; map Fig. 21)

**Diagnosis.** Body spherical with abdomen apically rounded. Pronotal margins curved, straight at extreme base. Elytron without midbasal stria. Lateral margin of metaventricle with poorly-developed bead, if present, indicated in anterior half.

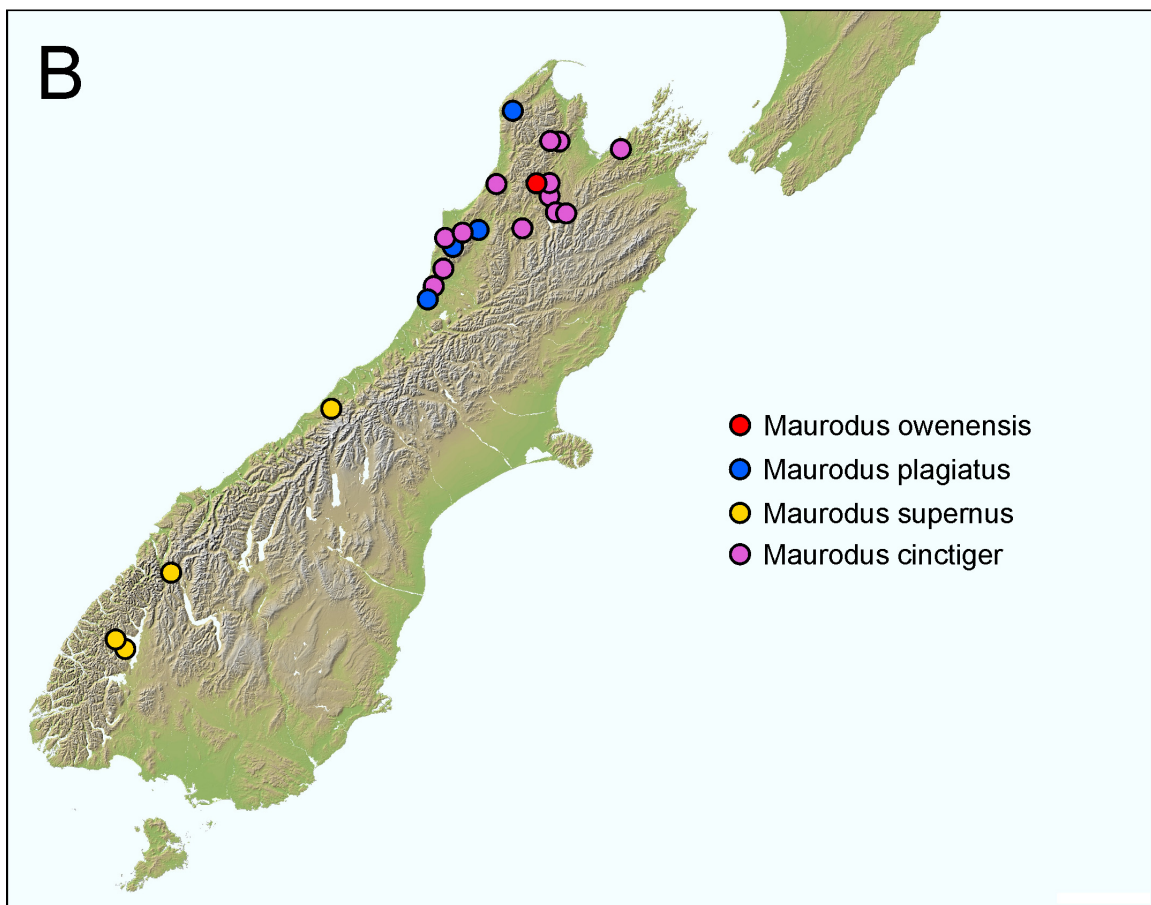
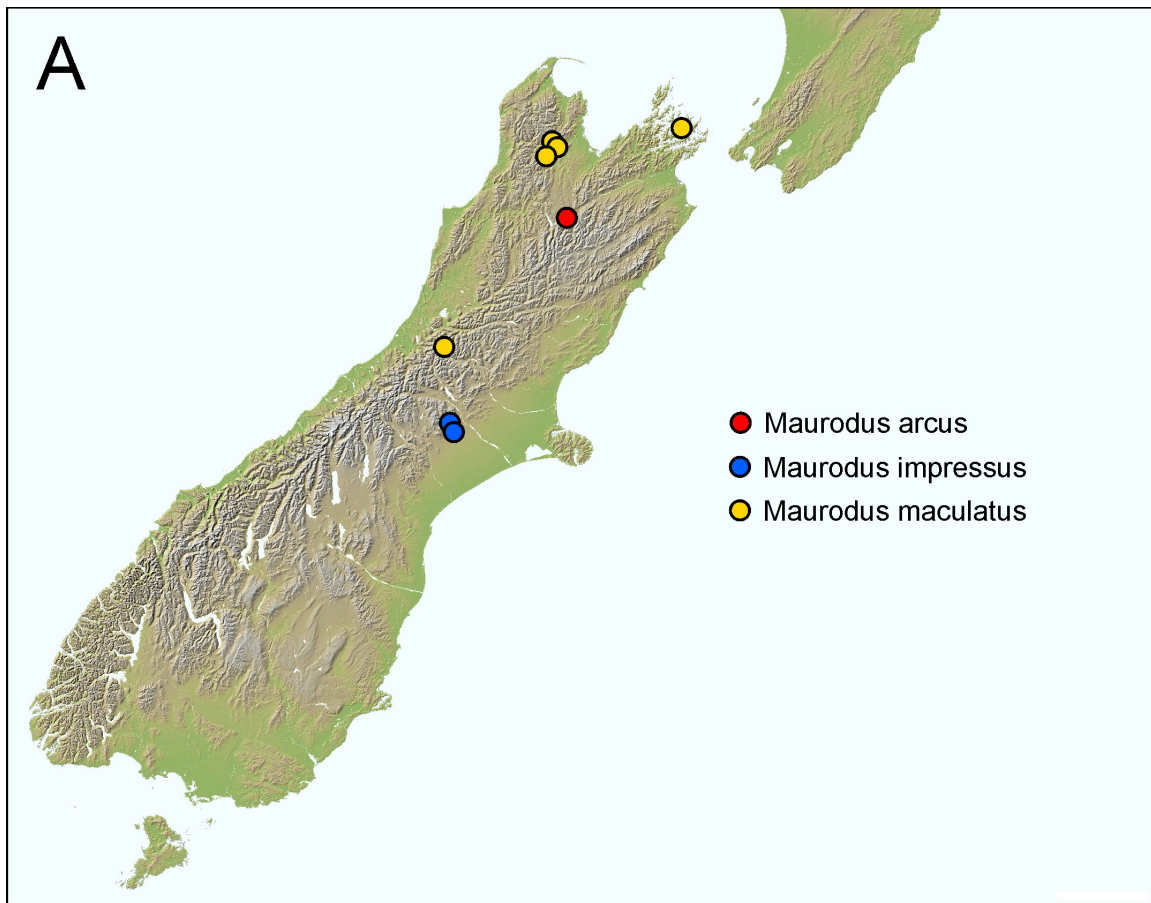
**Description.** Length 2.9–3.8 mm (greatest depth 1.50–1.90 mm). Body broadly oval and unicoloured dark-brown to black, some specimens with a slight metallic sheen; antennae, mouthparts and legs dark brown to black. Microsculpture absent dorsally, present ventrally; abdominal ventrites with scattered punctures that may be weakly indicated. Clypeus moderately to finely punctate, anterior margin straight; frontoclypeal suture present with medial and lateral postclypeal lines present; vertex moderately to finely punctate. Ratio of antennomere lengths: 1.1/0.7/0.9/0.8/0.9/0.8/1.0/1.1/1.1/1.2/1.5. Pronotum transverse (2.20–2.50 x wider than long), lateral margins curved, straight at extreme base and strongly convex in outline; punctures coarse at base and progressively diffuse anteriorly, those at base stronger than elsewhere on the body, deeper than those on abdominal ventrites, if these are present. Prosternal lines or carinae in front of procoxae anteriorly convergent with the anterior width about 0.3x narrower than procoxal width; intercarinal space not convex. Elytra widest at middle, strongly convex outline with apex rounded (1.03–1.24x the greatest elytral width), 3.20x longer than pronotal length; punctuation very weak striate, not impressed and faint striae present in some specimens; midbasal stria absent; epipleuron about 3x wider than metanepisternum. Lateral margin of metaventricle with poorly-developed bead, if present, indicated in anterior half. Median lobe of aedeagus in lateral view narrow and flattened, somewhat broad with an acute apex; in dorsal view weakly notched anteriorly, more or less parallel-sided, and not gradually widened towards the rounded apex.

**Comments.** *Zeaphilon mirandum* can be distinguished from *R. marskeae* by its shape and the absence of a distinct midbasal stria.

**Distribution.** North Island: ND, AK.

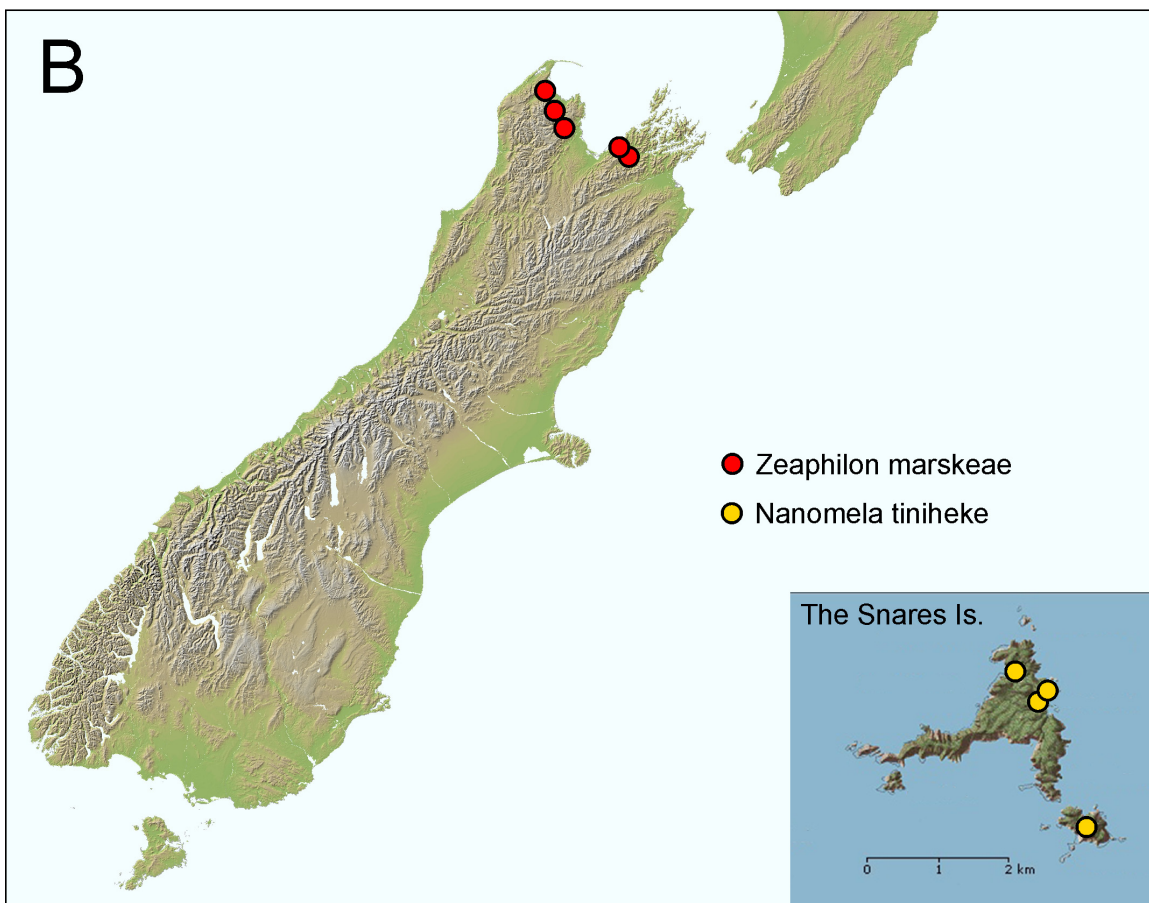
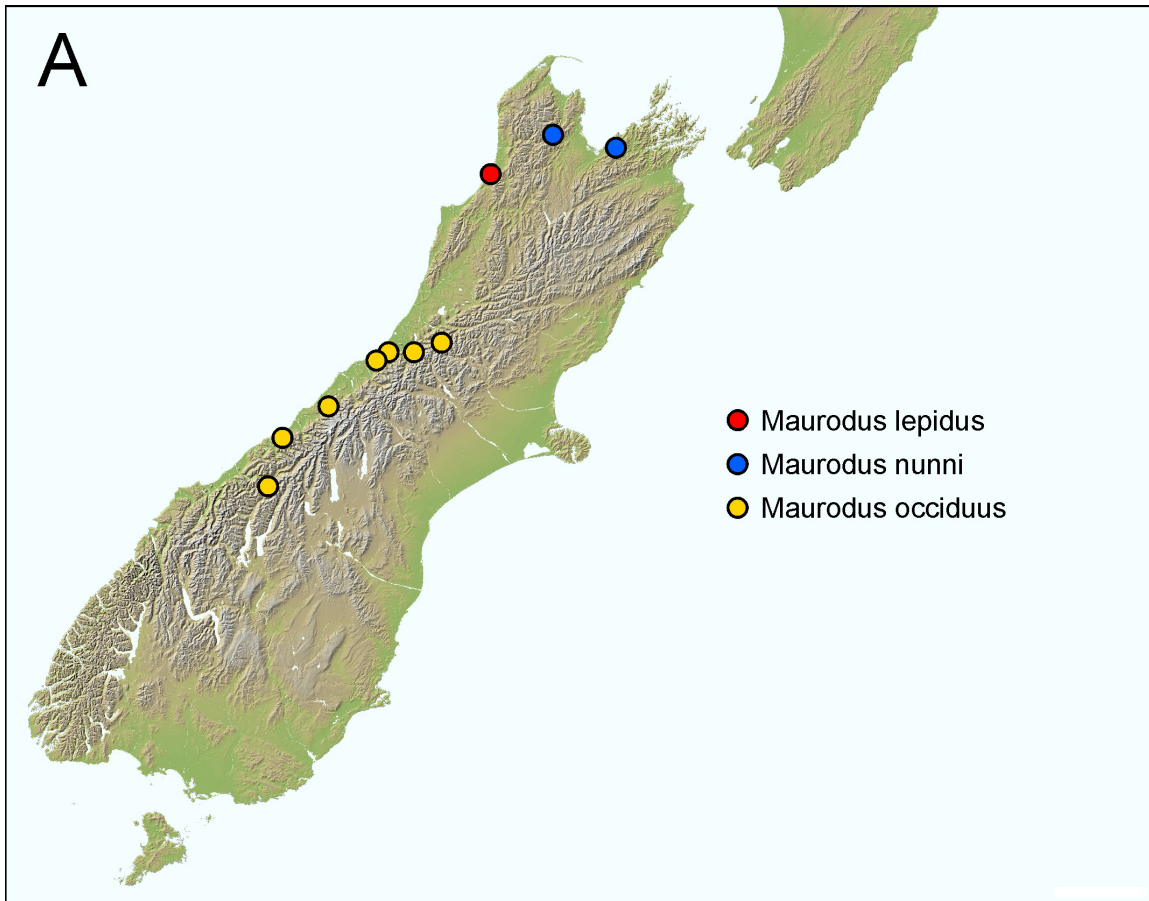
**Etymology.** Derived from the Latin word *mirandus* meaning “wonderful”.

**Types examined.** Holotype (AMNZ): sex not determined, “NEW ZEALAND, ND North Cape area, NW of Mt Te Pahi, 267m, 8.iii.1967, K.A.J. Wise // Tairaire, kohekohe ect leaf litter in forest remnant. P/S 262 L9300”. Paratypes (12). **ND:** 2, same as holotype [34.503192S, 172.825599E] (AMNZ); Whakaangi SR, 222m, 34.948469S, 173.546768E, sifting TB408, 18.01.2008, T.R. Buckley, D. Seldon, R. Hoare (1, LUNZ; 4, NZAC); North Cape, Kohuronaki, 34.488684S, 172.833634E, bush litter, 28.04.2000, S.E. Thorpe (1, AMNZ). **AK:** Warkworth, Dome Forest, 260m, 36.360838S, 174.613151E, 08.05.1999, S.E. Thorpe (1, AMNZ); Warkworth, Pohuehue SR, 36.461391S, 174.646255E, stream bed under stones, 05.01.2003 S.E. Thorpe (1, AMNZ); Atuanui, Mt Auckland, 36.446639S, 174.460284E, pitfall F15, 01.01.2002, A. Warren (1, AMNZ).



FIGURES 19A–B. A and B, South Island.





**FIGURES 20A–B.** South Island with subantarctic Snares Island (insert).

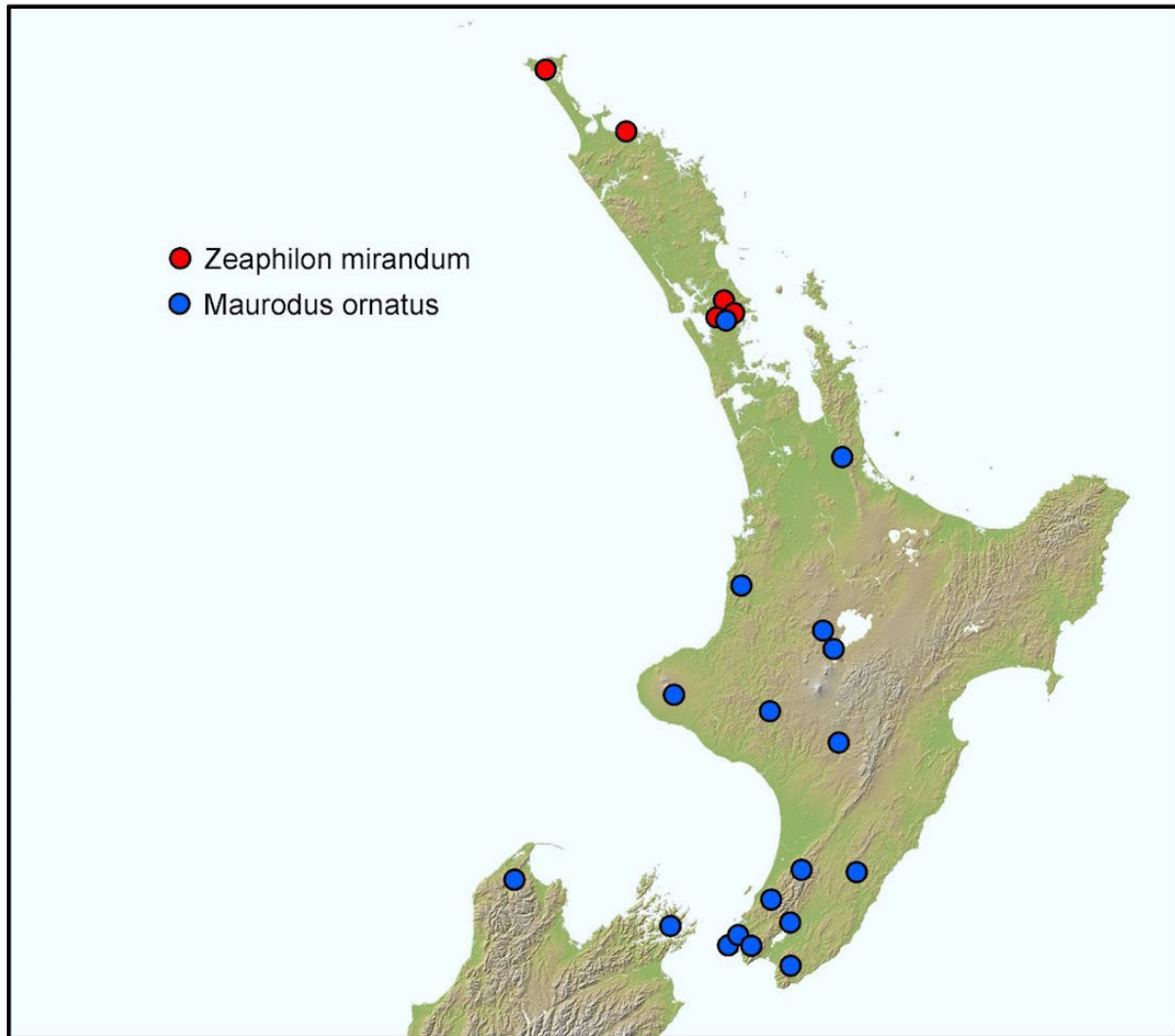


FIGURE 21. North Island.

### Introduced Chrysomelinae in New Zealand

While surprisingly little is known about the native New Zealand fauna, much is known about the exotic species. Several species of chrysomelids listed by Maddison *et al.* (2010) have been introduced deliberately for bio-control purposes, including three chrysomelinae (Withers *et al.* 2015). *Chrysolina hyperici* (Förster) (Fig. 17A) and *Chrysolina quadrigemina* (Suffrian), originally from Eurasia, were introduced as biocontrol agents of St Johns Wort, *Hypericum perforatum* L. (Hypericaceae), during the 1940s (*C. hyperici* in 1943) and 1960s (*C. quadrigemina* in 1963) and are established (Groenteman *et al.* 2011). *Chrysolina quadrigemina* is also found on tutsan, *Hypericum androsaemum* L. (Hypericaceae) (Spiller & Wise 1982), and to control for this weed, *Chrysolina abchasica* (Weise) has been released recently (Paynter *et al.* 2018). *Gonioctena olivacea* (Förster) (Fig. 17C) was introduced in 2007 from Europe for control of *Cytisus scoparius* and is now established (Hayes *et al.* 2013).

All of the self or accidentally introduced species of chrysomelinae are paropsines, originating from Australia, and feeding on introduced *Acacia* or *Eucalyptus*. *Dicranosterna semipunctata* (Chapuis, 1877) (Fig. 17B) feeds on the leaves of Tasmanian Blackwood *Acacia melanoxylon* R. Br. (Fabaceae) (Murray & Withers 2011), and other species of *Acacia* in Australia. The three members of the genus *Peltoschema* Reitter (Fig. 17E) recorded from New Zealand also feed on *Acacia*. *Peltoschema* species (officially recorded as *P. suturalis* (Germar 1848), but not this species) was eradicated from its only reported locality in Wellington (Hataitai Park) in 2001 (Bejakovich 2004).

*Peltoschema mansueta* (Weise, 1901) was collected by Kuschel (1990, listed as *Pyrgoides* sp.) from *Acacia mearnsii* De Wild, in Auckland. This beetle is abundant in southeast Australia, feeding on *Acacia* flowers, but its status in New Zealand remains unknown. A third species, *Peltoschema* species near *orphana* (Erichson, 1843) has recently been discovered in Auckland on *Acacia longifolia* (Ben Boyd, pers. com. 2018) and is similar to an undescribed species from the Sydney area.

Five accidentally introduced species of paropsine feed on *Eucalyptus*. *Paropsis charybdis* Stål, 1860 (Fig. 17D), first recorded in New Zealand in 1916 (White 1973, Kuschel 1990), is currently one of the major pests in eucalypt plantations (White 1973, Spiller & Wise 1982; Withers *et al.* 2015). Two species of *Trachymela* (*T. catenata* (Chapuis 1877) and *T. sloanei* (Blackburn 1896); Fig. 17F) are established (Steven & Mulvey 1977) and have been the focus of biocontrol studies (Murray *et al.* 2010). *Paropsisterna beata* (Newman, 1842) was first recorded on North Island in 2012 and was thought to be successfully eradicated (Withers 2016, Yamoah *et al.* 2016) but a single specimen of *P. beata* was reportedly observed in July 2016 some distance from the eradication site. There have been no other reported observations since that time. Pending further validated observations the establishment status of *P. beata* in New Zealand remains unresolved (A. Flynn, pers. com. 2019). *Paropsisterna cloelia* (Stål, 1860), was discovered in 2016 in the Hawkes Bay area and identified as *P. variicollis* (Chapuis, 1877) (Lin *et al.* 2017). This name is a junior synonym of *P. cloelia* (**syn. nov.**). Both *Paropsisterna* species are currently under study for control measures (Lin *et al.* 2017; A. Pugh, pers. com. 2017).

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#### APPENDIX 1. Checklist of endemic New Zealand Chrysomelinae

***Aphilon*** Sharp 1876: 100; Sharp 1886: 447; Broun 1880: 629 (*Aphilon* [sic]); Broun 1893: 1309, 1311; Weise 1915: 436 (Phaedonini); Neave 1939: 247; Seeno & Wilcox 1982: 84; Daccordi 1994: 80

Type species: *Aphilon enigma* Sharp, by monotypy

***convexum*** Broun 1893b: 1310 (Howick)

***enigma*** Sharp 1876: 100 (Auckland); Broun 1880: 629–630; Broun 1893: 1502

***latulum*** Broun 1893: 1310 (Stratford)

***minutum*** Broun 1880: 631 (Whangarei Harbour)

***monstrosum*** Broun 1886: 874 (Waitakerei Range); Broun 1893: 1311

***praestans*** Broun 1893: 1309 (no locality; Clevedon?)

***punctatum*** Broun 1880: 630 (Parua Forest); Broun 1893: 1311

***scutellare*** Broun 1893: 1501 (Maketu)

***sobrinum*** Broun 1886: 875 (Waitakerei); Broun 1893: 1311

***sternalis*** Broun 1921b: 664 (Titirangi)

***Caccommolpus*** Sharp 1886: 447; Broun 1893: 1308; Broun 1915: 343; Weise 1915: 434, 436 (Phaedonini); Neave 1939: 510; Seeno & Wilcox 1982: 84 (*Caccommolpus* [sic]); Daccordi 1994: 80

Type species: *Caccommolpus globosus* Sharp, this designation.

***amplus*** Broun 1921a: 590 (Glenhope)

***flectipes*** Broun 1914: 295 (Mt Hutt)

***fuscicornis*** Broun 1917: 466 (Mount Dick)

***globosus*** Sharp 1886: 447 (Greymouth); Broun 1893: 1308; Broun 1917: 466

***hallianus*** Broun 1917: 466 (Mount Dick, Lake Wakatipu); Broun 1921a: 590

***laticollis*** (Broun 1893: 392), **comb. nov.** (Thames)

***montanus*** Broun 1921b: 665 (Mount St Arnaud)

***nigristernis*** Broun 1917: 465 (Hollyford)

*pretiosum* (Broun 1880: 630), **comb. nov.** (Tairua)  
*pullatus* Broun 1893: 1309 (Forty-Mile Bush); Broun 1912: 259  
*subcupreus* Broun 1921a: 589 (Glenhope)  
*substriatus* Broun 1917: 467 (Ben Lomond)  
*tibialis* Broun 1917: 467 (Mount Dick)  
*viridescens* Broun 1917: 468 (Dyer's Pass); Broun 1921a: 590

**Chalcolampra** Blanchard 1853: 328; Baly 1855: 170, 180-1; Type species: *Chalcolampra convexa* Blanchard, by monotypy; [*Chrysomela acervata* Germar, by later designation (Baly 1855) is invalid]  
= *Eualema* Broun; Daccordi 1994: 77 (subg. of *Chalcolampra* Blanchard)  
Type species: *Eualema walkeri* Broun, by monotypy.  
= *Allocharis* Sharp 1882: 98–9; Broun 1893: 1306; Broun 1915: 343; Weise 1916: 434, 436 (Phyllocharini); Weise 1916: 203; Hudson 1934 (host); Neave 1939: 116; Seeno & Wilcox 1982: 87; Spiller & Wise 1982: 118 (host); Daccordi 1994: 77 (subg. of *Chalcolampra* Blanchard); Reid 1995: 582 (larva);  
Type species: *Allocharis marginata* Sharp, by monotypy  
= *Cyrtonogetus* Broun 1915: 343; Neave 1939: 950; Seeno & Wilcox 1982: 87; **syn. nov.**  
Type species: *Cyrtonogetus crassus* Broun, by monotypy; Daccordi 1994: 77

*crassa* (Broun 1915: 343), **comb. nov.** (Remarkables)  
*fuscipes* (Broun 1917: 464) (Moa Basin)  
*limbata* (Broun 1893: 1307) (Dunedin, Mount Maungatua); Weise 1916: 203; Broun 1917: 3957  
*marginata* (Sharp 1882: 99) (Craigie Burn); Purdie 1884: 166 (larval host); Broun 1893: 1306–7; Weise 1916: 203; Broun 1917: 462, 465  
*media* (Broun 1917: 463) (Ben Lomond)  
*morosa* (Broun 1893: 1307) (Castle Hill); Weise 1916: 203  
*nigricollis* (Broun 1917: 463) (Ben Lomond, Mount Dick)  
*picticornis* (Broun 1917: 463) (Ben Lomond)  
*praestans* (Broun 1917: 462) (Moa Basin)  
*robusta* (Broun 1917: 464) (Lake Wakatipu); Hudson 1934 (host); Spiller & Wise 1982: 118 (host)  
*speculifera* Sharp 1882: 98 (Greymouth); Broun 1910: 77 (sen. syn. *Eualema walkeri* Broun); Weise 1916: 200; = *walkeri* Broun 1903:86 (*Eualema*); Broun 1910: 77 (jun. syn. *Chalcolampra speculifera* Sharp)  
*subsulcata* Broun 1917: 462 (Old Man Range)  
*tarsalis* (Broun 1917: 465) (Gordon's Knob)

**Maurodus gen. nov.**

Type species: *Cacomolpus ornatus* Broun 1910, this designation.

*arcus* **sp. nov.** (Rainbow Ski Field)  
*cinctiger* (Broun 1921a: 590), **comb. nov.** (Glenhope)  
*impressus* (Broun 1912: 258), **comb. nov.** (McClennan's Bush)  
*lepidus* **sp. nov.** (Karamea Bluff)  
*maculatus* (Broun 1893: 1309), **comb. nov.** (Mount Arthur)  
*nunni* **sp. nov.** (Flora Saddle)  
*occiduus* **sp. nov.** (Waiho Gorge)  
*ornatus* (Broun 1910: 77), **comb. nov.** (Waimarino)  
*owenensis* **sp. nov.** (Mt Owen)  
*plagiatus* (Sharp 1886: 448), **comb. nov.** (Greymouth); Broun 1893: 1308–9; Broun 1910: 78;  
*supernus* **sp. nov.** (Takahe Valley)

**Nanomela gen. nov.**

Type species: *Nanomela tiniheke*, **sp. nov.**, this designation.

*tiniheke* **sp. nov.** (Snares Islands)

*Zeaphilon* **gen. nov.**

Type species: *Z. mirandum*, **sp. nov.**, this designation

*marskeae* **sp. nov.** (Pelorus Bridge Scenic Reserve)

*mirandum* **sp. nov.** (North Cape)