

RESEARCH PAPER

# Revision of the New Zealand genus *Adalmus* with description of six new species (Coleoptera: Staphylinidae: Pselaphinae)

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**Abstract.** The monotypic pselaphine New Zealand genus *Adalmus* Reitter, 1882 (Euplectitae: Trichonychini: Panaphantina) is revised to include eight species. Six new species are described: *Adalmus bullerensis* sp. nov., *A. kanierensis* sp. nov., *A. karekarensis* sp. nov., *A. mangamukaensis* sp. nov., *A. puberilumbus* sp. nov., and *A. serrilumbus* sp. nov. In addition, the genus *Dalmisus* Sharp, 1886 is placed as a junior subjective synonym of *Adalmus* and the species *Dalmisus batrisodes* Sharp, 1886, *Plectomorphus longiceps* Broun, 1913 and *Plectomorphus longipes* Broun, 1912 are considered junior subjective synonyms of *A. velutinus* Reitter, 1885. *Adalmus rugiceps* (Broun, 1921) comb. nov. is transferred from the genus *Plectomorphus* Raffray, 1898. Lectotypes are designated for *Adalmus velutinus* Reitter, 1885 and *Dalmisus batrisodes* Sharp, 1886. An identification key, descriptions, habitus illustrations, diagnostic characters, a checklist, and distribution maps of *Adalmus* species are provided.

**Key words.** Coleoptera, Staphylinidae, Pselaphinae, Trichonychini, Panaphantina, ant-loving beetles, new combination, new species, new synonymy, lectotype designation, taxonomy, New Zealand

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## Introduction

The supertribe Euplectitae (Staphylinidae: Pselaphinae) in New Zealand contains 22 genera belonging to three tribes: Trogastrini, Euplectini, and Trichonychini. The monotypic genus *Adalmus* Reitter, 1882 is one of the several endemic New Zealand genera of the subtribe Panaphantina of the tribe Trichonychini, which was known only from Greymouth, South Island (NOMURA & LESCHEN 2006).

*Adalmus* was described by REITTER (1882) without mention of a species. The single species *A. velutinus* Reitter, 1885 collected and sent to him by Richard Helms from Greymouth, was described later by REITTER (1885), becoming the type species via subsequent monotypy (NEWTON & CHANDLER 1989). Shortly thereafter, SHARP (1886) described a new genus and species, *Dalmisus batrisodes*

Sharp, 1886, from Greymouth based on a specimen sent to him also by Helms. Although SHARP (1886) mentioned in his description that Reitter may have known about this species, both authors used different sets of diagnostic characters, and due to this, Sharp had no knowledge that the species had been previously described by Reitter.

The tribal placement of *Adalmus* and *Dalmisus* Sharp, 1886 was different for some time: *Adalmus* was placed in the Trichonychini (RAFFRAY 1890, 1904, 1908, 1911) and Trogastrini (NEWTON & CHANDLER 1989); and *Dalmisus* was placed in the Euplectini (RAFFRAY 1904, 1908, 1911; NEWTON & CHANDLER 1989). RAFFRAY (1908: 117) provided the observation that *Adalmus* was perhaps closest to the similarly precinctive New Zealand genus *Whitea* Hutton, 1904 (replacement name for *Brounia* Raffray, 1898



and preceding the proposed replacement name *Brouniella* Raffray, 1904; see NEWTON & CHANDLER 1989: 22), and perhaps also to another New Zealand genus, *Dalmisus*, which had been placed in the tribe Euplectini. The basic source of the disagreement with the tribal placement of the two genera is the presence of a single strong claw (*Dalmisus* and *Brounia*) or two unequal claws, with one a much smaller claw to characterize *Adalmus* (RAFFRAY 1908). Our observation proved that only a few *A. batrisodes* have the anterior/mesal tarsal claw visible as a reduced seta-like form (not visible when appressed to the large posterior/lateral claw), while members of *Whitea* have only the large posterior claw visible. Such a difference led to a placement in different tribes when appropriately named specimens were not available to both Reitter and Raffray. Both genera were placed in the Euplectini by KLIMASZEWSKI et al. (1996), and in the Trichonychini (subtribe Panaphantina) by NOMURA & LESCHEN (2006), the placement followed also in this paper.

Collections over the past 40 years have revealed a greater diversity of *Adalmus* species distributed on both the North and South Islands. This study is based on 139 specimens and the examination of all New Zealand types of New Zealand Euplectitae by the second author, which are all held in The Natural History Museum, London, and the Muséum national d'Histoire naturelle, Paris. In this paper, six new species of *Adalmus* are described, and a few generic and specific synonymies are proposed.

### Material and methods

Specimens were provided by the following institutions or individuals, with those facilitating the loans being named. Below are the collection acronyms used in the text:

BMNH	The Natural History Museum, London, England (Roger Booth, Maxwell V. L. Barclay, Dmitry Telnov);
DSC	Personal collection of Donald S. Chandler, Durham, United States (to be later deposited in the University of New Hampshire Insect Collection);
FMNH	Field Museum of Natural History, Chicago, IL, United States (Maureen Turcatel);
JTN	Personal collection of John T. Nunn, Dunedin, New Zealand (to be later deposited in the NZAC);
MNHN	Muséum national d'Histoire naturelle, Paris (†Nicole Berti, Antoine Mantilleri);
NZAC	New Zealand Arthropod Collection, Auckland, New Zealand (Richard A. B. Leschen).

A total of 139 specimens were examined. Data labels of all specimens were transcribed verbatim. Donald S. Chandler examined the types in BMNH and MNHN and placed 'Specimen compared with type' labels on those that matched the types. Two back slashes (//) indicate label breaks.

Slide mounted specimens were fully dissected for detailed observation of characters after macerating the internal tissues using a 10 % KOH solution. Dissections were performed according to HANLEY & ASHE (2003). Permanent microscopic slide mounts were produced using Hempstead Halide® Hoyer's Microscope Slide Mounting Medium and UV/LED Resin. The terminology and nomenclature were based on CHANDLER (2001) and LAWRENCE et al. (2011).

Characters of species were observed using a Leica S8APO stereo microscope and DM1000 LED optical microscope. Images were generated using a Sony ILCE-7RM3 camera with a 10X/20X Mitutoyo Plan Apo Objective and stacked using Helicon Focus 8.

The ratios used in the species descriptions were measured by the method illustrated by Fig. 1C. Also, abbreviations used in the description are explained in Fig. 1. For convenience, when the terms 'right' and 'left' are used to describe of male genitalia in the identification key and results, they refer to the division of sides based on ventral view, not indicating morphological positions. The area codes used for distributions are Crosby Area Codes (CROSBY et al. 1976, 1998). Paired appendages are treated in the key and descriptions as singular, paired structures of the body as plural. The map of New Zealand was produced by SimpleMapp (SHORTHOUSE 2010), which was modified to add locality symbols. The plate with figures was produced and modified using Adobe Photoshop 2020.

### Taxonomy

#### *Adalmus* Reitter, 1882

*Adalmus* Reitter, 1882: 197. Type species: *Adalmus velutinus* Reitter, 1885: 338 (by subsequent monotypy).

*Adalmus*: RAFFRAY (1890: 107), RAFFRAY (1904: 603), RAFFRAY (1908: 117), RAFFRAY (1911: 46); NEWTON & CHANDLER (1989: 30); KLIMASZEWSKI et al. (1996: 147); NOMURA & LESCHEN (2006: 246).

*Dalmisus* Sharp 1886: 381. Type species: *Dalmisus batrisodes* Sharp, 1886: 381 (by monotypy); **syn. nov.**

*Dalmisus*: BROWN (1893: 1048); RAFFRAY (1904: 582), RAFFRAY (1908: 107), RAFFRAY (1911: 43); HUTTON (1904: 178); KLIMASZEWSKI et al. (1996: 147); NOMURA & LESCHEN (2006: 246, Fig. 23).

**Diagnosis.** *Adalmus* is characterized by the following features (Fig. 1): (1) body color and antenna blackish-brown or reddish-brown, legs reddish-brown, maxillary palpus and tarsi yellowish-brown, body pubescent; (2) head with broad elongate rostrum, rostrum nearly half head length, apical portion of rostrum concave between prominent longitudinal antennal tubercles, distinct setose dorsal tentorial pits in large circular impressions, area between circular impressions convex, ridge of antennal tubercles extending to small eyes placed near gular angle, head appearing flattened in lateral view, greatest height at mid-point of antennal articulations; (3) gular area broadly and deeply concave, with distinct ventral tentorial pits; (4) antennomere I large, longer than II, club often weakly defined, formed from apical three antennomeres; (5) pronotum with distinct median longitudinal sulci, lateral longitudinal sulci variably distinct but present, median longitudinal sulcus extending posteriorly from antebasal sulcus, laterally arcuate transverse antebasal sulcus connecting lateral antebasal foveae with median antebasal impression; (6) prosternum with distinct median prosternal carina, with two lateral procoxal foveae, lacking notopleural foveae; (7) mesoventrite with short median mesoventral fovea, about as long as width of opening, with two lateral mesoventral foveae; (8) metaventrite with two lateral metaventral foveae, lateral mesocoxal foveae present; (9) each elytron with two basal elytral foveae, subhumeral fovea distinct, with

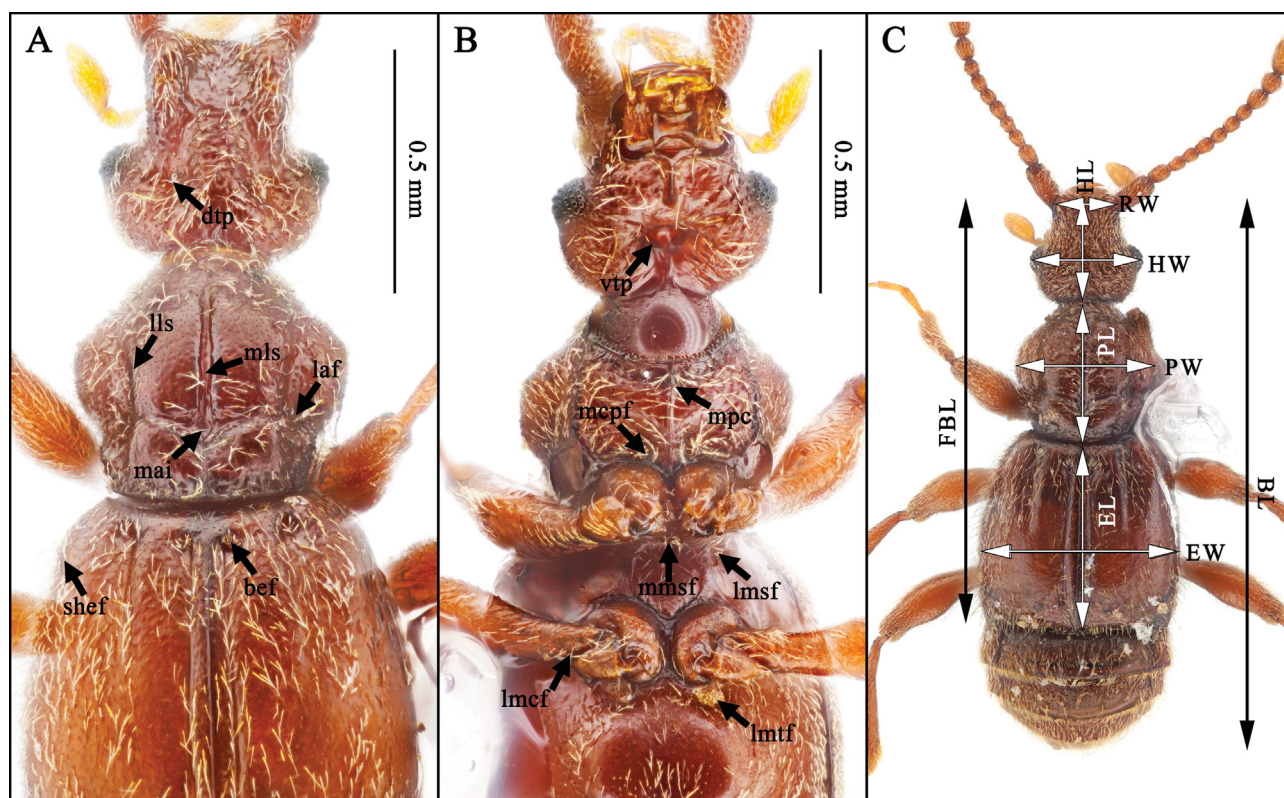


Fig. 1. Characters of *Adalmus*. A–B – *A. karekarensis* sp. nov. in dorsal (A) and ventral (B) view; C – *A. rugiceps* (Broun, 1921) with marked measurements. Abbreviations: bef – basal elytral fovea; shcf – subhumeral elytral fovea; dtp – dorsal tentorial pit; laf – lateral antebasal fovea; lls – lateral longitudinal sulcus; lmsf – lateral mesoventral fovea; lmtf – lateral metaventral fovea; mai – median antebasal impression; mcpf – median procoxal fovea; mls – median longitudinal sulcus; mmsf – median mesoventral fovea; mmtf – median metaventral fovea; mpc – median prosternal carina; ptp – posterior tentorial pit; BL – body length; EL – elytra length; EW – elytra width; FBL – fore body length; HL – head length; HW – head width; PL – pronotum length; PW – pronotum width; RW – rostrum width.

short stria extending to elytral posterior margin; discal striae short, at most extending to elytral mid-point; with sharply defined lateroapical cleft; (10) abdomen as long as elytra or shorter. Visible tergites 1–4 (IV–VII) subequal in length; ventrite 2 (sternite IV) longest at middle, with lateral foveae, ventrites 3–6 (V–VIII) subequal in length; (11) legs with tarsomere I short, nearly indistinct, apical two tarsomeres long and thin, progressively longer from front to hind legs, tarsomere II longest for middle and hind legs; anterior/mesal claws either lacking or reduced to fine seta (protarsi of *A. velutinus*), posterior/lateral claw long, thin and distinct; (12) aedeagus strongly asymmetric, with short to elongate basal stem, parameres different in form, median lobe asymmetric, small apical or preapical opening of secondary gonopore sometimes distinct.

**Comments to classification.** Type species of *Dalmisus* and *Adalmus* were compared by the second author and the morphological characteristics are the same (specimens examined listed below with *A. velutinus*); therefore, *Dalmisus* Sharp, 1886 syn. nov. is considered to be the junior subjective synonym of *Adalmus* Reitter, 1882.

#### Key to species of the genus *Adalmus*

1 Mesotrochanter with posterior margin rounded, lacking spine (Figs 5C, 8C). ..... 2  
– Mesotrochanter with posterior margin angulate or with distinct spine (Figs 2C, 3C, 4C, 6C, 7C, 9C; arrow). .... 3

2 Body size larger (2.40 mm); antennomere I about three times longer than II (Fig. 8G); male metatrochanter with distinct spine (Fig. 8N; arrow); space between lateral metaventral foveae narrow (1/7 of meso- and metaventral widths) (Fig. 8C). ..... *A. serrilumbus* sp. nov.  
– Body size smaller (1.60–1.85 mm); antennomere I about twice longer than II (Fig. 5A); male metatrochanter with thin curved spine (Fig. 5D); space between lateral metaventral foveae moderately wide (1/4 of meso- and metaventral widths). .....  
..... *A. mangamukaensis* sp. nov.  
3 Male protrochanter with distinct spine (Fig. 4B); body size larger, more than 2.5 mm long (Fig. 4A). .....  
..... *A. karekarensis* sp. nov.  
– Male protrochanter with posterior margin rounded, lacking spine; body size less than 2.3 mm. .... 4  
4 Male metatrochanter with distinct spine (Fig. 6D). ....  
..... *A. puberilumbus* sp. nov.  
– Male metatrochanter with posterior margin rounded, lacking spine. .... 5  
5 Profemur clavate in both sexes (Fig. 7B; arrow); metafemur swollen (Fig. 7D). .. *A. rugiceps* (Broun, 1921)  
– Profemur linear in both sexes, not clavate; metafemur not swollen. .... 6  
6 Apex of median lobe blunt; right paramere longer than left paramere; left paramere bifurcate, spine curved ventrally (Figs 2E–G). ..... *A. bullerensis* sp. nov.

- Apex of median lobe acutely pointed; left paramere simple. .... 7
- 7 Apex of median lobe bifurcate, with short spines at 1/3 and 2/3 apical; left paramere as wide as median lobe in ventral view (Figs 9E–G). ....  
..... *A. velutinus* Reitter, 1885
- Apex of median lobe simple, with short spine at base, long spine at basal 1/4, incurved apical spine, with small foramen near apical 1/3; left paramere broader than median lobe in ventral view (Figs 3E–G). ....  
..... *A. kanierensis* sp. nov.

***Adalmus bullerensis* Byeon & Chandler, sp. nov.**

(Figs 2, 10)

**Type material.** HOLOTYPE: ♂ (genitalia dissected, NZAC): “NEW ZEALAND: BR, Lewis Pass Nat. Res., 0.6km s Lewis Pass, 870m 17.xii.1984–21.i.1985 *Nothofagus* spp. forest A.Newton/M.Thayer 714 // flight intercept (window) trap”. PARATYPES: SOUTH ISLAND: BR [Buller]: same data as holotype (2 ♂♂, genitalia dissected, 5 ♂♂ 1 ♀ FMNH); Nelson Lks.N.P., n slope Mt. Robert, Pinchgut Track 950m, 14.xii.84–6.i.85 *Nothofagus* spp. forest A.Newton/M.Thayer 707 // flight intercept (window) trap (1 ♂ FMNH); Nelson Lks.N.P., Lake Rotoiti, St. Arnaud Track, 670m 14.xii.1984–6.i.1985 *Nothofagus* spp. forest A.Newton/M.Thayer 706 // flight intercept (window) trap (2 ♂♂ FMNH); Nelson Lakes NP, N slope Mt. Robert 860m 23–26.iii.80 *Nothofagus* spp. A.Newton,M.Thayer //

berl., leaf & log litter, forest floor (1 ♂ FMNH). Nelson Lakes NP, N slope Mt. Robert 860m 23–26.iii.80 *Nothofagus* spp. A.Newton,M.Thayer (1 ♀ FMNH). NN [Nelson]: Slaters Road, 0.7 km s Whangamoia Saddle, 410m 13.xii.1984–4.i.1985 *Nothofagus* spp forest A.Newton/M.Thayer 703 // flight intercept (window) trap (1 ♂, genitalia dissected, 1 ♂ FMNH). WD [Westland]: 1.8km n Punakaiki ,80m 19.xii.1984–20.i.1985 hdwd. for. with nikau A.Newton/M.Thayer 718 // flight intercept (window) trap (1 ♂, genitalia dissected, FMNH).

**Diagnosis.** Males of this species can be distinguished from other *Adalmus* species by the following characters: antennomere I approximately twice as long as II (Fig. 2A); pro- and metatrochanters unmodified (Figs 2B, D), mesotrochanter with distinct spine (Fig. 2C; arrow); right paramere longer than left paramere, slightly curved at middle, left paramere dichotomous and short spine curved ventrally; median lobe with small foramen at apex, with dorsal curved spine (Figs 2E–G).

**Description.** BL 1.98–2.20 mm (FBL 1.49–1.68 mm, 10 specimens measured); body, antenna, and legs reddish-brown, maxillary palpus and tarsi yellowish-brown; body pubescent.

*Head* slightly broader than long (HL : HW = 38 : 43), widest at eyes, rostrum broad (HW : RW = 43 : 24), impressions between ridges of antennal tubercles weak, ridges

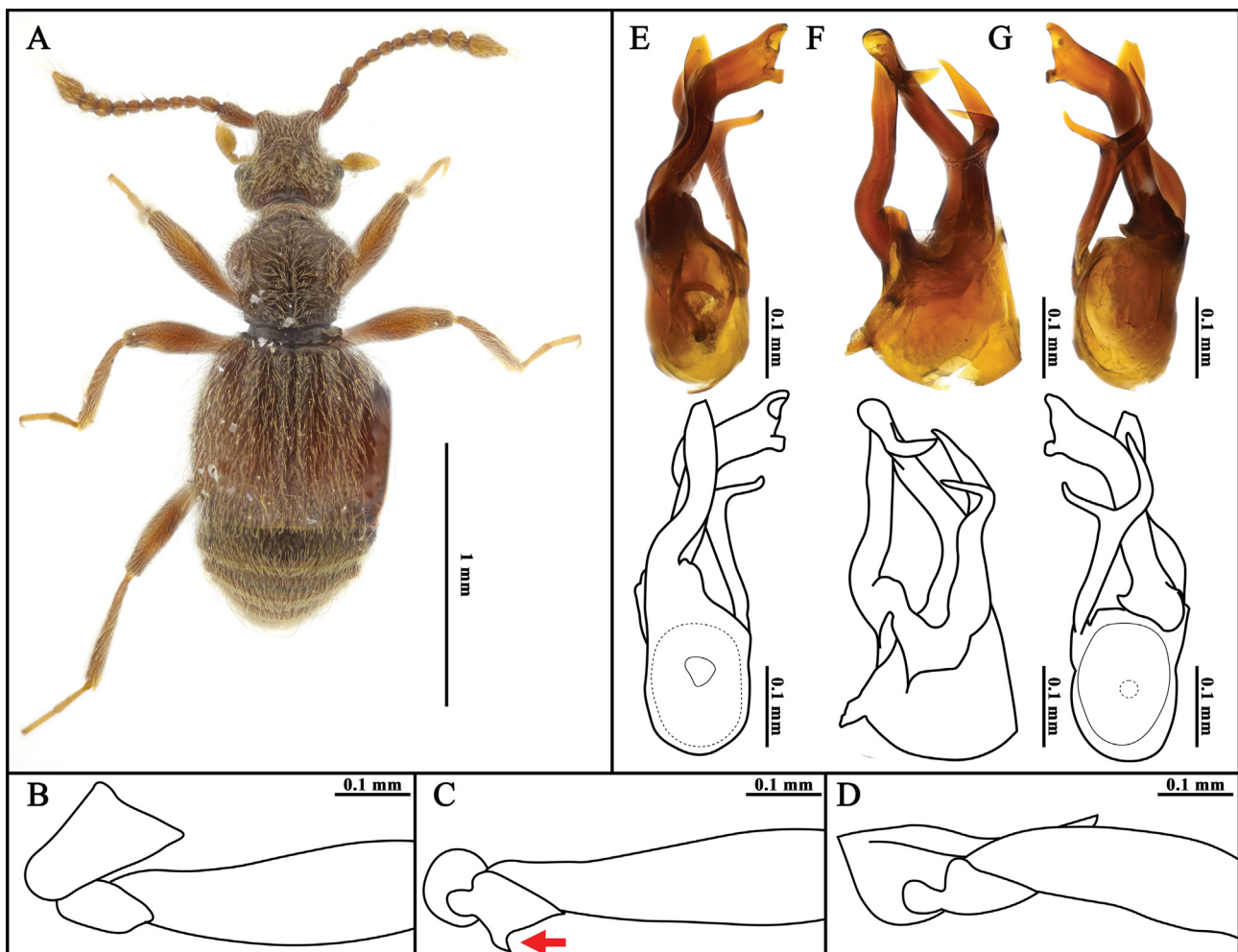


Fig. 2. *Adalmus bullerensis* sp. nov. A – male dorsal habitus; B – front leg; C – middle leg; D – hind leg; E–G – aedeagus in ventral (E), lateral (F) and dorsal (G) view.

of antennal tubercles parallel; apex of rostrum strongly projecting, clypeus not visible in dorsal view; antennal length approximately 0.84–0.88 mm, antennomere I slightly broader than II, approximately twice as long as II, antennomere II longer and wider than III–VIII, antennomeres III–VIII similar in length, antennomeres IX–XI forming indistinct club.

**Thorax.** Prothorax wider than head (HW : PW = 43 : 49), subhexagonal (PL : PW = 49 : 49), broadest at anterior 2/5, gently narrowing at middle, narrowest at anterior margin.

**Elytra** broader than pronotum (EW : PW = 75 : 49), slightly broader than long (EL : EW = 67 : 75); with sutural striae; weak impression at elytral foveae; subhumeral foveae present, not visible in dorsal view.

**Legs.** Pro- and metatrochanters with smooth posterior margin; profemur rugose on ventral side; mesotrochanter with distinct spine; tibiae and femora of similar length, moderately long.

**Aedeagus** asymmetric, 0.49 mm long, with diaphragm and basal stem; parameres asymmetric, right paramere

longer than left paramere, right paramere slightly curved at middle, left paramere dichotomous and short spine curved ventrally; median lobe with small foramen at apex, with dorsal curved spine.

**Sexual dimorphism.** Females have comparatively larger bodies, and the mesotrochanter is simple, with a smooth posterior margin.

**Etymology.** The specific epithet is an adjective derived from the Crosby code of the type locality ‘Buller’.

**Distribution.** New Zealand (South Island: BR, NN, WD; Fig. 10).

*Adalmus kanierensis* Byeon & Chandler, sp. nov.

(Figs 3, 10)

**Type material.** HOLOTYPE: ♂ (genitalia dissected, NZAC): “NEW ZEALAND: WD Lake Kanier Road, 2.8km nw Lake Kanier 120m, 8–19.i.1985 podocarp-hdwd. forest A.Newton/M.Thayer 732 // flight intercept (window) trap”. PARATYPES: SOUTH ISLAND: WD [Westland]: same data as holotype (1 ♂, genitalia dissected, FMNH); 2.7km se Lake Moeraki 30m, 10–18.i.1985 hdwd.-podocarp forest A.Newton/M.Thayer 736 // flight intercept (window) trap (1 ♂ FMNH).

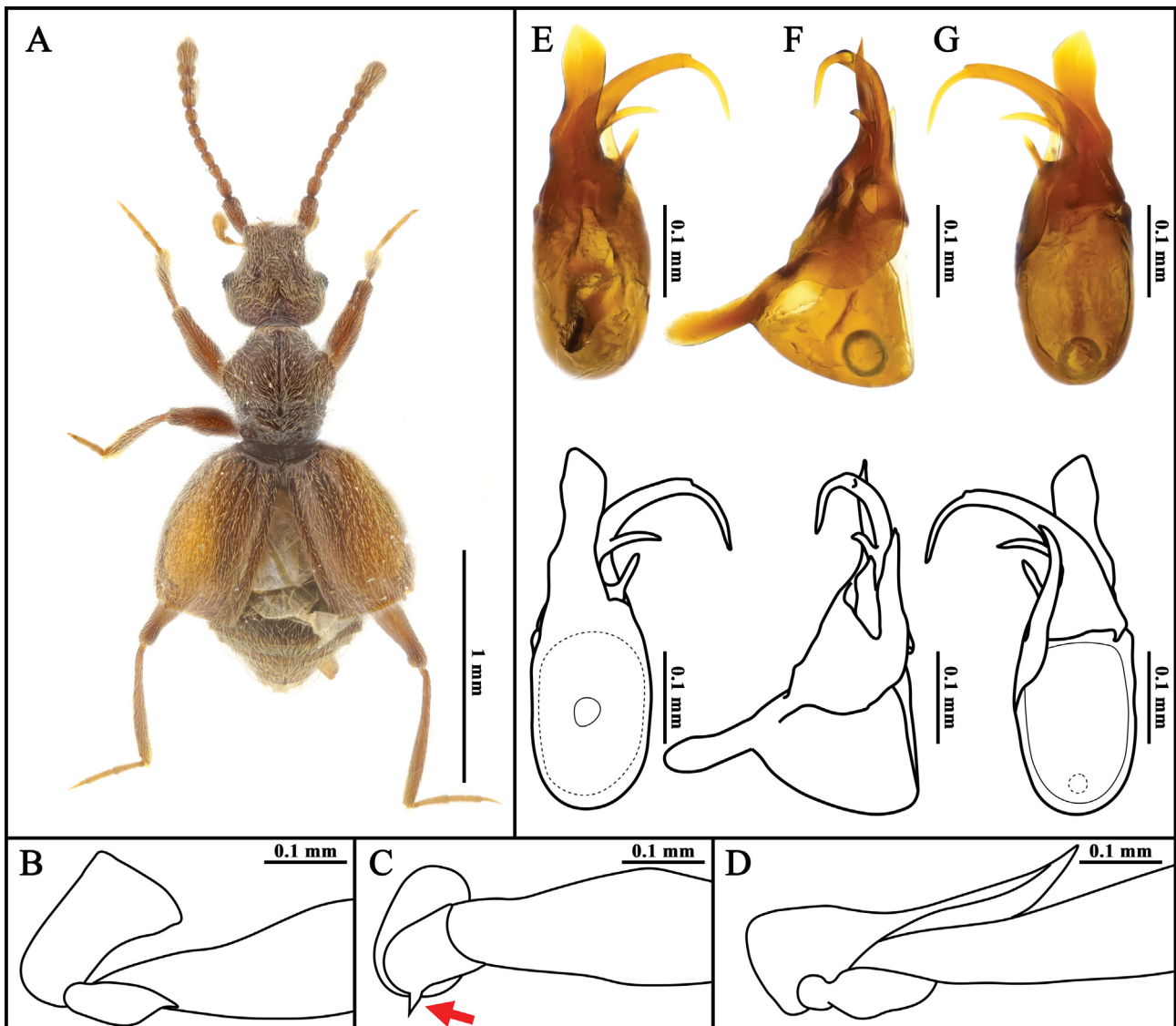


Fig. 3. *Adalmus kanierensis* sp. nov. A – male dorsal habitus; B – front leg; C – middle leg; D – hind leg; E–G – aedeagus in ventral (E), lateral (F) and dorsal (G) view.

**Diagnosis.** Males of this species can be distinguished from other *Adalmus* species by the following characters: antennomere I approximately twice as long as II (Fig. 3A); pro- and metatrochanters unmodified (Figs 3B, D), mesotrochanter with distinct thin spine (Fig. 3C; arrow); right paramere larger than left paramere, slightly curved at middle; median lobe with short spine at base, long spine at basal 1/4, curved spine at apex, with small foramen at apical 1/3 (Figs 3E–G).

**Description.** BL 2.01–2.10 mm (FBL 1.54–1.68 mm); body, antenna, and legs reddish-brown, maxillary palpus and tarsi yellowish-brown; body pubescent.

**Head** slightly broader than long (HL : HW = 38 : 45), widest across eyes, rostrum broad (HW : RW = 45 : 27), impression between ridges of antennal tubercles weak, ridges of antennal tubercles parallel; apex of rostrum strongly projecting, clypeus not visible in dorsal view; antennal length approximately 0.94–0.97 mm, antennomere I slightly broader than II, antennomere II longer and wider than III–VIII, antennomere V longest among III–VIII, antennomeres IX–XI forming indistinct club.

**Thorax.** Prothorax wider than head (HW : PW = 45 : 51), subhexagonal (PL : PW = 50 : 51), broadest at anterior 2/5, gently narrowing at middle, narrowest at anterior margin.

**Elytra** broader than pronotum (EW : PW = 80 : 51), slightly broader than long (EL : EW = 67 : 80); with sutural striae; weak impression at elytral foveae; subhumeral foveae present, not visible in dorsal view.

**Legs.** Pro- and metatrochanters with smooth posterior margin; profemur rugose on ventral side; mesotrochanter with distinct thin spine; tibiae and femora of similar length, moderately long.

**Aedeagus** asymmetric, 0.38 mm long, with diaphragm and basal stem, basal stem long; parameres asymmetric, right paramere larger than left paramere, right paramere slightly curved at middle; median lobe with short spine at base, long spine at basal 1/4 and curved spine at apex, with small foramen at apical third.

**Sexual dimorphism.** Female unknown.

**Etymology.** The specific epithet is an adjective derived from the type locality ‘Kaniere’.

**Distribution.** New Zealand (South Island: WD, Fig. 10).

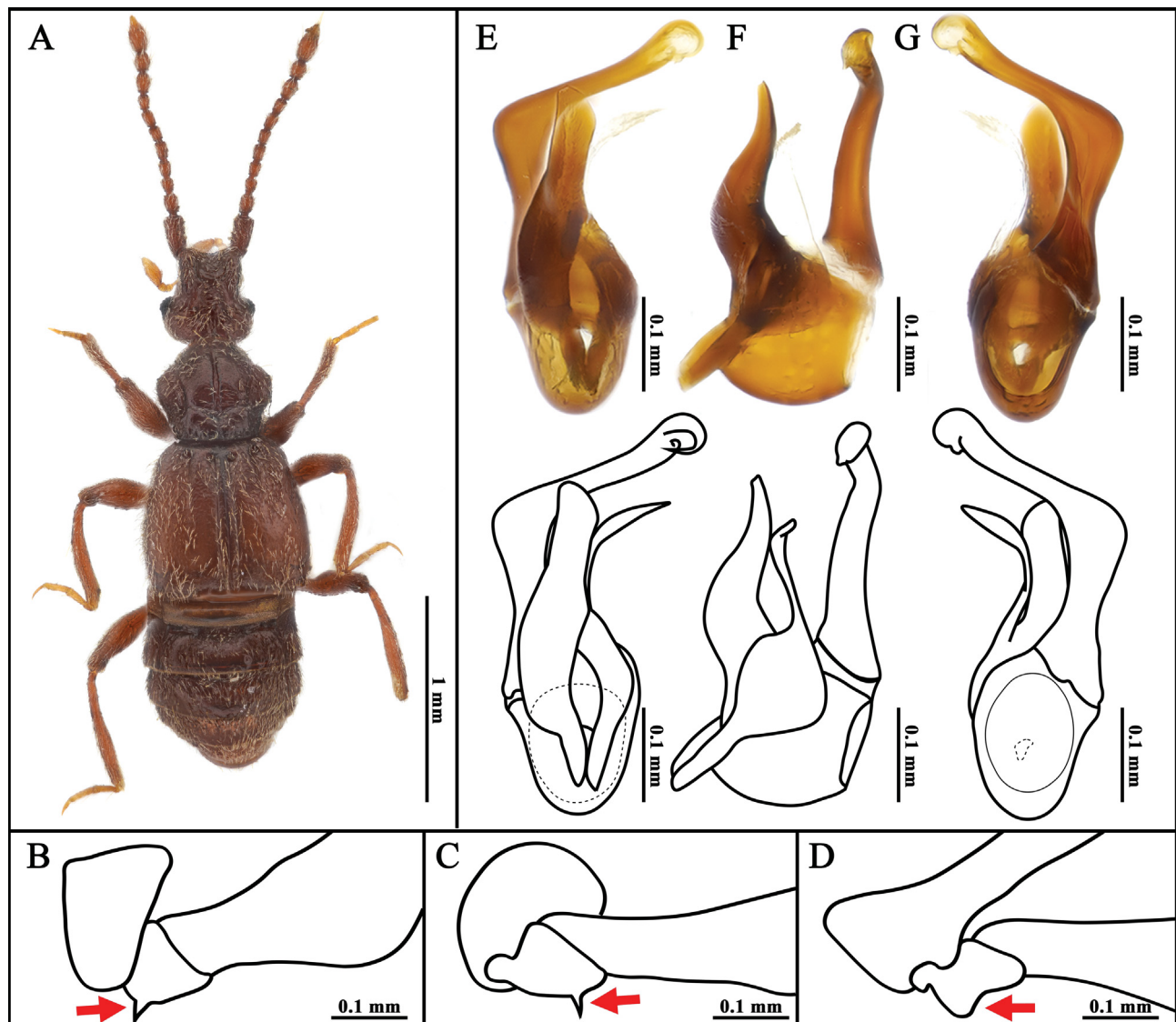


Fig. 4. *Adalmus karekarensis* sp. nov. A – male dorsal habitus; B – front leg; C – middle leg; D – hind leg; E–G – aedeagus in ventral (E), lateral (F) and dorsal (G) view.

***Adalmus karekarensis* Byeon & Chandler, sp. nov.**

(Figs 4, 10)

**Type material.** HOLOTYPE: ♂ (genitalia dissected, NZAC): “Karekare, W.Coast. Auckland. [handwritten] // 10th. Joint of antennae not transverse. [red line, handwritten] // *Brouniella* maybe var of *laevifrons* Broun. ♀. ? [handwritten] // Coll. A.E.Brookes. 23.2.1916. [handwritten] // A.E.Brookes Collection // NZ Arthropod Collection Private Bag 92170 Auckland New Zealand NZAC04261131”. PARATYPE: **NORTH ISLAND: ND [Northland]:** Waipoua SF Lookout area 29 Oct 1980 G.Kuschel // Sifted moss 80/93 (1 ♀ NZAC).

**Diagnosis.** Male of this species can be distinguished from other *Adalmus* by the following characters: body size larger than other *Adalmus* species, more than 2.5 mm long; antennomere I longer than 0.2 mm, approximately twice as long as II (Fig. 4A); rostrum wider (HW : RW = 48 : 30); pro- and mesotrochanters with distinct spine, metatrochanter with broad, sharp and rounded margin (Figs 4B–D; arrow); left paramere thick, long, with blunt apex; right paramere slender, short, curved acutely pointed apex; median lobe abruptly angulate at middle, smooth, apex with medial curved spine (Figs 4E–G).

**Description.** BL 2.51–2.54 mm (FBL 1.63–1.66 mm); body and antennomere I blackish-brown, legs and antennomeres II–XI reddish-brown, maxillary palpus, and tarsi yellowish-brown; body pubescent.

*Head* slightly broader than long (HL : HW = 43 : 48), widest across eyes, eyes convex, rostrum broad (HW : RW = 48 : 30), impression between ridge of antennal tubercles deep, ridge of antennal tubercles parallel, apex of rostrum strongly projecting, clypeus not visible in dorsal view; antennal length approximately 1.23–1.25 mm, antennomere I approximately twice as long as II, antennomere II longer and broader than III–VIII, antennomere VIII smaller than those of IV–VII, antennomere X slightly shorter than IX, antennomeres IX–XI forming indistinct club, XI approximately 2.2 times as long as broad.

*Thorax.* Prothorax slightly broader than head (HW : PW = 48 : 58), subhexagonal (PL : PW = 51 : 58), broadest at anterior 2/5, sharply narrowing at middle, narrowest at anterior margin.

*Elytra* broader than pronotum (EW : PW = 82 : 58), broader than long (EL : EW = 70 : 82); with sutural striae; weak impression extending from basal elytral foveae; subhumeral foveae present, not visible in dorsal view.

*Legs.* Pro- and mesotrochanters with distinct spine; profemur rugose on ventral side; metatrochanter with broad sharply defined; tibiae and femora of similar lengths, moderately long.

*Aedeagus* asymmetric, 0.42 mm long, with diaphragm and basal stem; parameres asymmetric, left paramere thick, long, with blunt apex, right paramere slender, short, and apex sharp; median lobe curved, smooth, apex with inner curved spine.

**Sexual dimorphism.** Female has a simple protrochanter with posterior margin smoothly curved.

**Etymology.** The specific epithet is an adjective derived from the type locality ‘Karekare’.

**Distribution.** New Zealand (North Island: AK, ND; Fig. 10).

***Adalmus mangamukaensis*****Byeon & Chandler, sp. nov.**

(Figs 5, 10)

**Type material.** HOLOTYPE: ♂ (genitalia dissected, NZAC): “NEW ZEALAND: ND, Mangamuka Gorge, Mangamuka, Gorge Walkway, 35°11'42"S, 173°27'09"E, 455 m, sifted leaf litter & rotten woods, 15.Nov.2018, J. Shen”. PARATYPES: **NORTH ISLAND: AK [Auckland]:** Waitakere Ranges Reg. Pk., Upper Huia Reser. Track,I-31-2010, 340m 4km SW Waiatarua D.S.Chandler, sift mixed leaf litter (1 ♂, genitalia dissected, 2 ♀♀ DSC). **ND [Northland]:** Waipoua SF, 199m Kauri Ricker TK 13 Apr 1980 J.C. Watt // Sifted litter 80/49 (1 ♂, genitalia dissected, NZAC); Waipoua SF, 290m Waikohatu Bridge 14 Apr 1980 J.C. Watt // Sifted litter 80/53 (1 ♀ NZAC); Waipoua SF Wairau smt, 390m 14 Apr 1980 // Sifted litter 80/51 (1 ♀ NZAC); Waipoua State Forest, Waikohatu Stream bridge 300m, 28.xi-6.xii.1984 kauri-hdwd.-podocarp A.Newton/M.Thayer 690 // flight intercept (window) trap (1 ♂ genitalia dissected, NZAC; 1 ♂, slide mounted, DSC; 2 ♂♂, genitalia dissected, 2 ♂♂ FMNH); Waipoua State Forest, Wairau Summit, 400m 27.xi-6.xii.1984 hdwd.-podocarp forest A.Newton/M.Thayer 687 // berl, leaf & log litter, forest floor (3 ♂♂ 1 ♀ FMNH); Trounson Kauri Park, 250m, 3-7.xii.1984 kauri-podocarp-hdwd. A.Newton/M.Thayer 698 // berl, leaf & log litter, forest floor (3 ♂♂ 1 ♀ FMNH); Waipoua SF, ToronuiTr.c150m 13.iv.1980 kauri-podocarp-broadlf.-nikau palm forest A.Newton,M.Thayer // berl, leaf & log litter, forest floor (2 ♂♂ 2 ♀♀ FMNH); Waipoua SF, Yakas Tree Tr. 350m 11-14.iv.1980 broadlf.-podocarp A.Newton,M.Thayer // berl, litter at bases of *Metrosideros robusta* trunks (1 ♂ 1 ♀ FMNH); Waipoua SF, Waiko-hatu Br. 290m 11-14.iv.80 *Agathis*-podocarp-broadlf. A.Newton,M.Thayer // berl, leaf & log litter, forest floor (1 ♀ FMNH). Waipoua SF, Toatoa Tr. 270m 12-15.iv.80 toatoa-kauri-podocarp-broadlf. A.Newton,M.Thayer // berl, leaf & log litter, forest floor (1 ♂ FMNH).

**Diagnosis.** Adult males of this species can be distinguished from other *Adalmus* species by the following characters: body size smaller than 2.0 mm (Fig. 5A); protrochanter with blunt curved spine (Fig. 5B; arrow), mesotrochanter unmodified (Fig. 5C), metatrochanter with weak blunt spine curved mesad (Fig. 5D; arrow); left paramere shorter than right paramere; right paramere weakly sclerotized, curving and spatulate; median lobe broad and longer than parameres (Figs 5E–G).

**Description.** BL 1.60–1.85 mm (FBL 1.13–1.30 mm, 8 specimens measured); body, antenna, and legs reddish-brown, maxillary palpus and tarsi yellowish-brown; body pubescent.

*Head* slightly broader than long (HL : HW = 34 : 40), widest across eyes, eyes convex, rostrum broad (HW : RW = 40 : 22), impression between ridge of antennal tubercles shallow, ridge of antennal tubercles parallel; apex of rostrum weakly projecting, clypeus barely visible in dorsal view; antennal length approximately 0.75–0.78 mm, antennomere I approximately 2.2 times longer than II, antennomere II longer and broader than III–VIII, antennomeres III–VIII similar in lengths, antennomeres IX–XI forming indistinct club, XI approximately 1.7 times as long as broad.

*Thorax.* Prothorax slightly wider than head (HW : PW = 40 : 45), subhexagonal (PL : PW = 42 : 45), broadest at anterior 2/5, sharply narrowing at middle, narrowest at anterior margin.

*Elytra* broader than pronotum (EW : PW = 60 : 45), slightly broader than long (EL : EW = 54 : 60); with sutural striae; weak impression at basal elytral foveae; subhumeral foveae present, not visible in dorsal view.

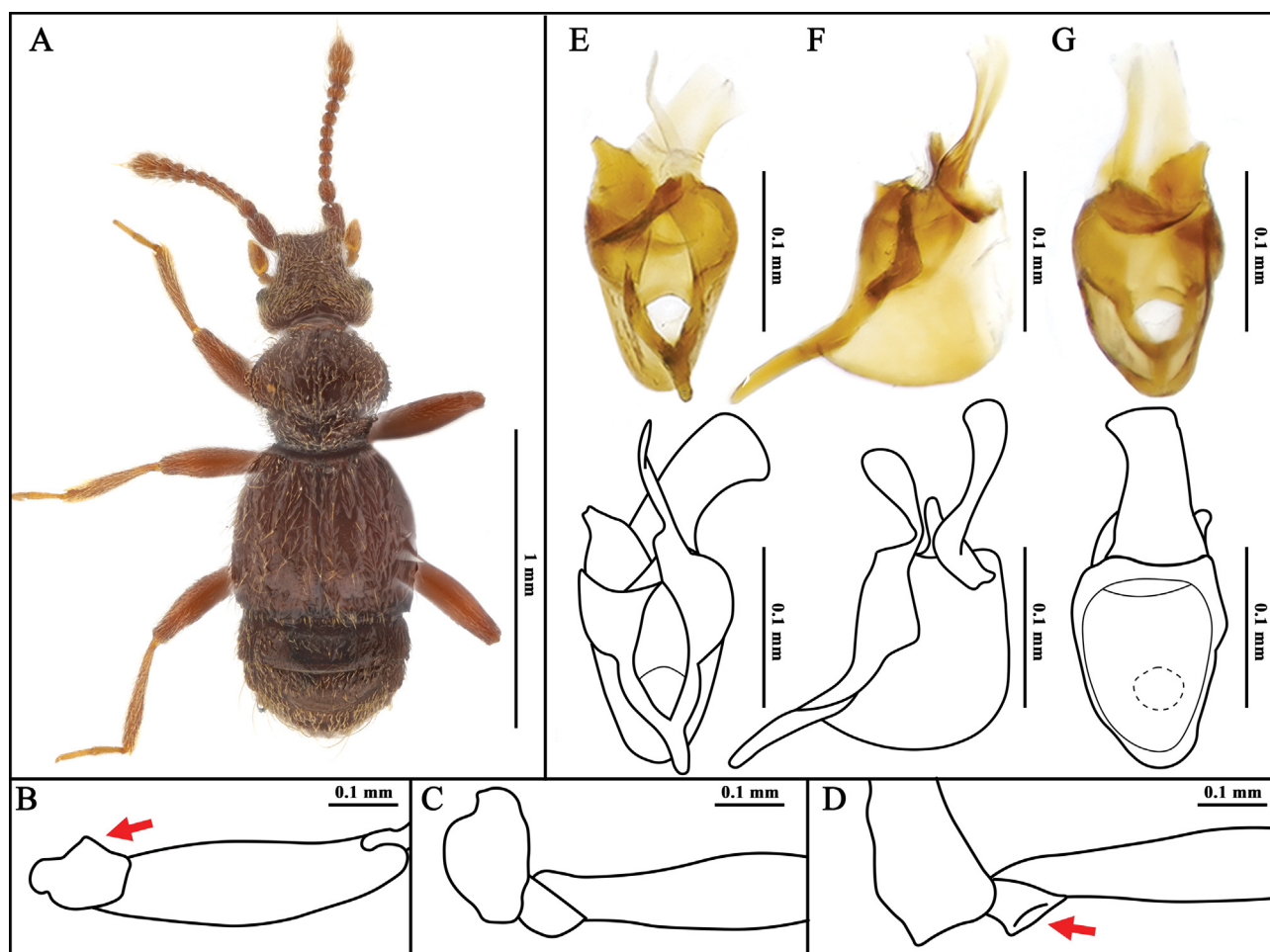


Fig. 5. *Adalmus mangamukaensis* sp. nov. A – male dorsal habitus; B – front leg; C – middle leg; D – hind leg; E–G – aedeagus in ventral (E), lateral (F) and dorsal (G) view.

**Legs.** Protrochanter with blunt curved spine; profemur with rugae on ventral side; mesotrochanter with smooth posterior margin, metatrochanter with weak blunt spine curved mesad; tibiae and femora of similar lengths, moderately long.

**Aedeagus** asymmetric, 0.23 mm long, with diaphragm and basal stem; parameres asymmetric, left paramere shorter than right paramere, right paramere weakly sclerotized, curving and spatulate; median lobe broad and longer than parameres.

**Sexual dimorphism.** Females have the posterior margin of the pro- and metatrochanters smoothly curved.

**Etymology.** The specific epithet is an adjective derived from the type locality ‘Mangamuka’.

**Distribution.** New Zealand (North Island: AK, ND; Fig. 10).

***Adalmus puberilumbus* Byeon & Chandler, sp. nov.**

(Figs 6, 10)

**Type material.** HOLOTYPE: ♂ (genitalia dissected, NZAC): “NEW ZEALAND: BR Nelson Lakes N.P., Mt. Robert Road, 660m 26.xii.84–6.i.85; *Lepto-spermum*-*Nothof. scrub* A.Newton/M.Thayer 722 // flight intercept (window) trap”. PARATYPES: SOUTH ISLAND: NN [Nelson]: Slaters Road, 0.7 km s Whangamoia Saddle, 410m 13.xii.1984–4.i.1985 *Nothofagus* spp forest A.Newton/M.Thayer 703 // flight intercept (window) trap (1 ♂ genitalia dissected, 3 ♀♀ DSC; 4 ♂♂ 2 ♀♀ FMNH); 0.6km e Gowans-

bridge, 330m, 18.xii.84–7.i.85 *Nothofagus* spp. forest A.Newton/M.Thayer 717 // flight intercept (window) trap (1 ♀ FMNH). **BR [Buller]:** Lks.N.P., Lake Rotoiti, St. Arnaud Track, 670m 14.xii.1984–6.i.1985 *Nothofagus* spp. forest A.Newton/M.Thayer 706 // flight intercept (window) trap (1 ♀ NZAC; 1 ♀ DSC; 1 ♂ FMNH); Lks.N.P., n slope Mt. Robert, Pinchgut Track 950m, 14.xii.84–6.i.85 *Nothofagus* spp. forest A.Newton/M.Thayer 707 // flight intercept (window) trap (1 ♂ FMNH); Lakes N.P., Mt. Robert Road, 660m 26.xii.84–6.i.85; *Lepto-spermum*-*Nothof. scrub* A.Newton/M.Thayer 722 // flight intercept (window) trap (1 ♀ FMNH); Maruia Springs 20 Nov 2010 // Washed soil sample. red beach forest [JTN] (1 ♀ JTN). **SD [Marlborough Sounds]:** Tennyson Inlet, east side Duncan Bay, 30m 15.xii.1984–5.i.1985 *pod.-Nothofagus* for. A.Newton/M.Thayer 709 // flight intercept (window) trap (1 ♂ FMNH); Tennyson Inlet, west side Te Mako Bay, 125m 15.xii.1984–5.i.1985 *Nothofagus*-*pod.-hdwd.* A.Newton/M.Thayer 710 // flight intercept (window) trap (1 ♂ FMNH); same locality label, but: berl, leaf & log litter, forest floor (1 ♀ FMNH).

**Diagnosis.** Males of this species can be distinguished from other *Adalmus* species by the following characters: apex of rostrum strongly projecting, clypeus not visible in dorsal view, antennomere I approximately 2.3 times as long as II (Fig. 6A); protrochanter unmodified (Fig. 6B), mesotrochanter with weak spine (Fig. 6C; arrow), metatrochanter with distinct spine (Fig. 6D; arrow); parameres fused and with blunt apex; median lobe with spine at middle, apex curved and setose (Figs 6E–G).

**Description.** BL 2.02–2.05 mm (FBL 1.52–1.55 mm, 10 specimens measured); body, antenna, and legs reddish-



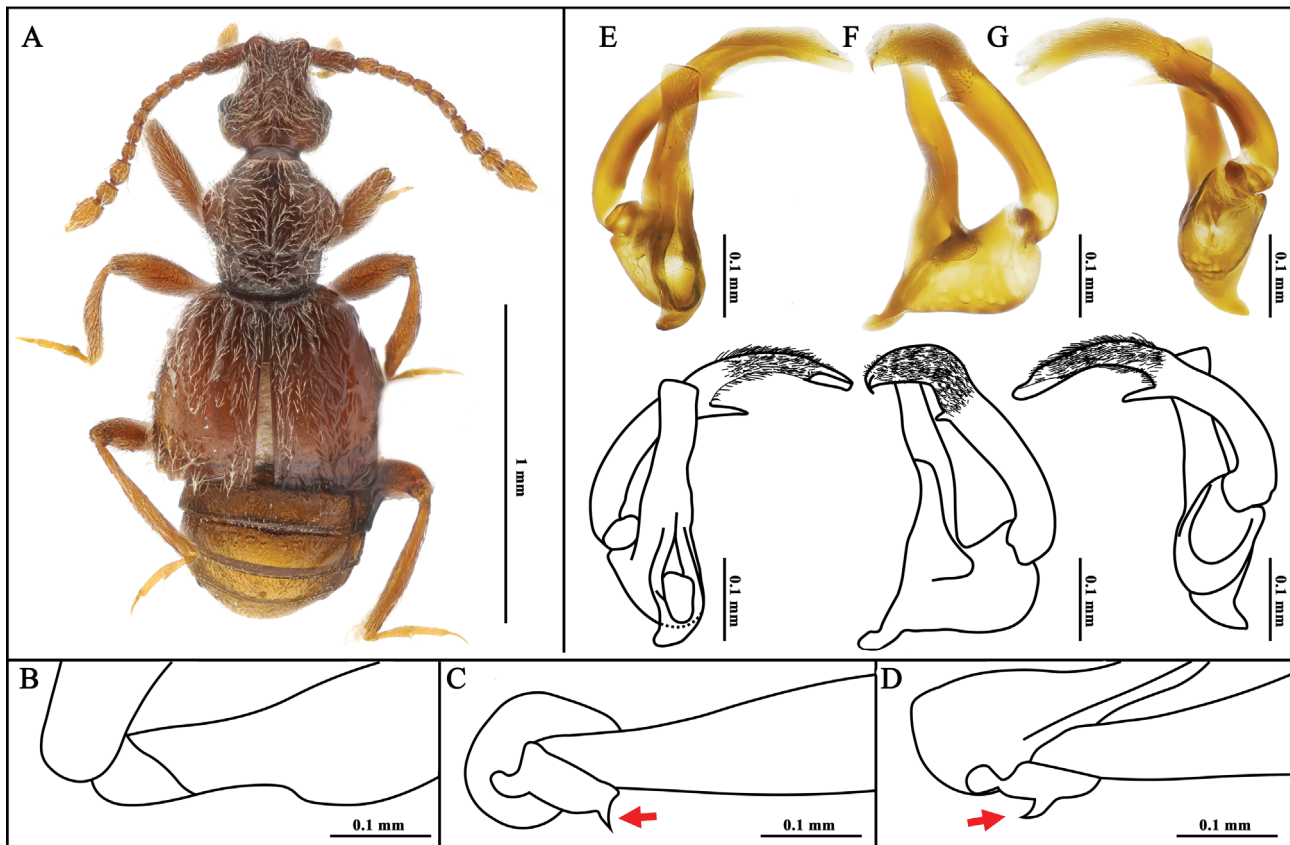


Fig. 6. *Adalmus puberilumbus* sp. nov. A – male dorsal habitus; B – front leg; C – middle leg; D – hind leg; E–G – aedeagus in ventral (E), lateral (F) and dorsal (G) view.

-brown, maxillary palpus and tarsi yellowish-brown; body pubescent.

**Head** slightly broader than long (HL : HW = 35 : 40), widest across eyes, rostrum broad (HW : RW = 35 : 24), impression between ridges of antennal tubercles deep, ridges of antennal tubercles parallel; apex of rostrum strongly projecting, clypeus not visible in dorsal view; antennal length approximately 0.91–0.93 mm, antennomere I slightly broader than II, approximately 2.3 times as long as II, antennomere II longer and wider than III–VIII, antennomere V longest among III–VIII, antennomeres IX–XI forming indistinct club.

**Thorax.** Prothorax wider than head (HW : PW = 40 : 49), subhexagonal (PL : PW = 48 : 49), broadest at anterior 2/5, sharply narrowing at middle, narrowest at anterior margin.

**Elytra** broader than pronotum (EW : PW = 64 : 49); slightly broader than long (EL : EW = 57 : 64), with sutural striae, weak impression at elytral foveae, subhumeral foveae present, not visible in dorsal view.

**Legs.** Protrochanter with smooth posterior margin; profemur rugose on ventral side; mesotrochanter with weak spine, metatrochanter with distinct spine; tibiae and femora of similar lengths, moderately long.

**Aedeagus** asymmetric, 0.33 mm long, with diaphragm and basal stem, basal stem curved, parameres fused and with blunt apex; median lobe with spine at middle, apex curved and setose.

**Sexual dimorphism.** Females have a simple metatrochanter with the posterior margin smoothly curved.

**Etymology.** The specific epithet is a noun in the nominative case, a combination of Latin words *puberi* ('downy', masculine) and *lumbus* ('genitalia', masculine) and refers to the setose apex of median lobe.

**Distribution.** New Zealand (South Island: BR, NN, SD; Fig. 10).

#### *Adalmus rugiceps* (Broun, 1921), comb. nov.

(Figs 7, 10)

*Plectomorphus rugiceps* Broun, 1921: 509. Type locality: Glenhope.

*Plectomorphus rugiceps*: HUDSON (1923: 366); NOMURA & LESCHEN (2006: 240).

**Type material.** HOLOTYPE: ♂ (BMNH): // 4023. [♂/New Zealand [red line] Broun Coll. Brit. Mus. 1922-482 / Glenhope, T. Hall, 10.12.1914 / *Plectomorphus rugiceps* [♂].

**Additional material examined.** SOUTH ISLAND: BR [Buller]: LEAF LITTER TARAKAKAU 17 MARCH 1968 R.A.CUMBER (1 ♂, genitalia dissected, 1 ♀ NZAC); N of Charleston 23 Dec 1992 F M Climo S30/9725699 // *Sphagnum* under regrowth rimu (1 ♂, slide mounted, NZAC); Gorae Fern Flat 25 III 2021 // Forest floor litter. J. Nunn [JTN] (1 ♂, genitalia dissected, NZAC); Rahu Res (just at start) 3 Apr 2004, R. Leschen, H. Haman, // litter/beating RL844, 42. 17S, 172.05E (1 ♀ NZAC); 0.8 kmN Bullcok Ck nr. Punakaiki 50m 23.iii.80 broadf-nikau palm-podocp. A.Newton, M. Thayer // berl, leaf & log litter, forest floor (1 ♂ 3 ♀♀ FMNH). NN [Nelson]: Glenhope. Kiwi 427m Tadmor Nelson // 5 Aug 69 J.I.Townsend // Litter (1 ♂ genitalia dissected, abdomen lost, NZAC). WD [Westland]: Franz Joseph 24.2.89 [handwritten] // J T Nunn collection [JTN] (1 ♂, genitalia dissected, 1 ♀ NZAC); 1.8km n Punakaiki, 80m 19.xii.1984-20.i.1985 hwd. for. with nikau A.Newton/M. Thayer 718 // flight intercept (window) trap (3 ♂♂ 6 ♀♀ FMNH); 1.8km n Punakaiki, 50m 19.xii.1984-20.i.1985 hwd.-podo.-nikau for A.Newton/M.Thayer 719 // berl., leaf & log litter, forest floor (1 ♂

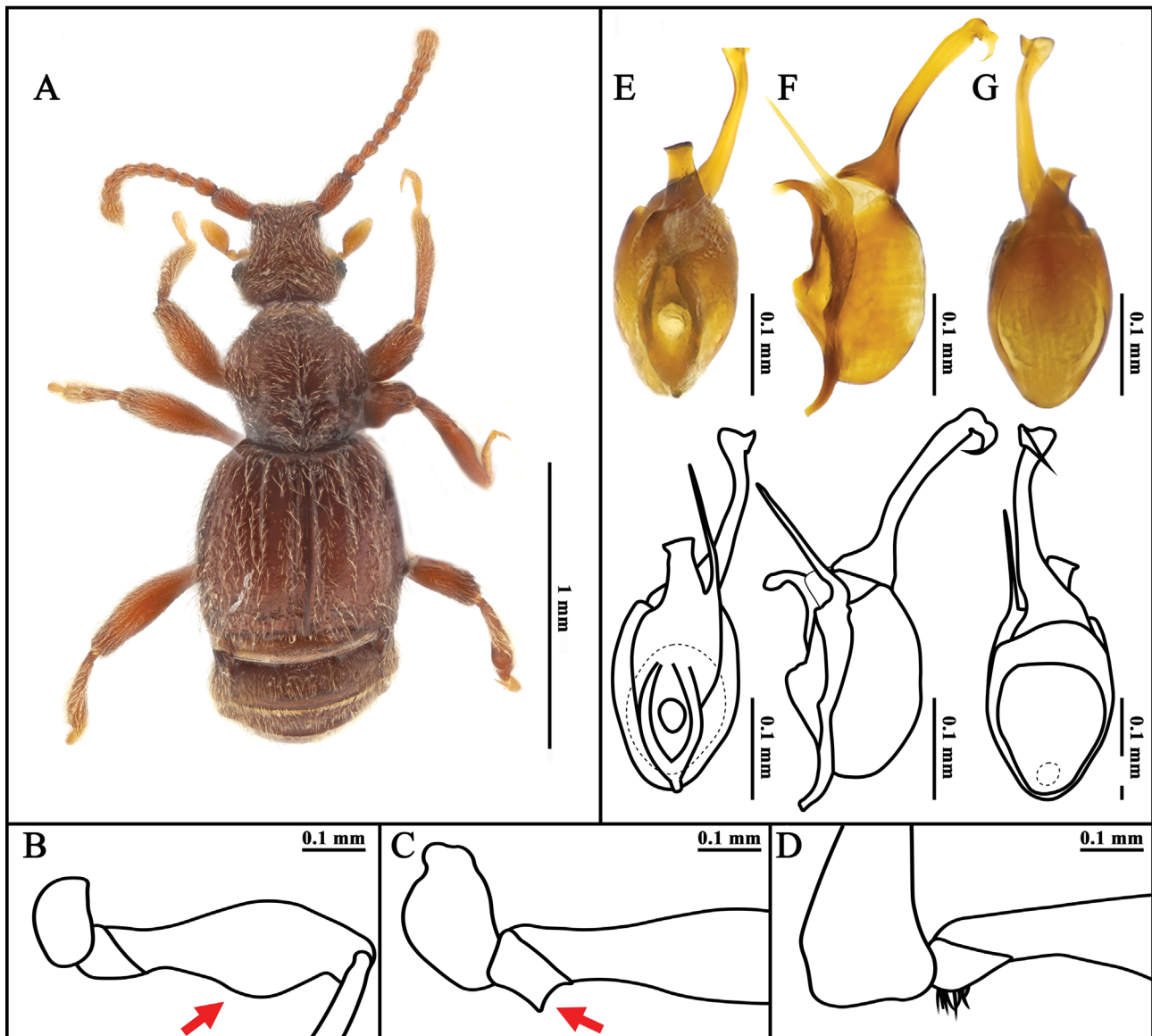


Fig. 7. *Adalmus rugiceps* (Broun, 1921). A – male dorsal habitus; B – front leg; C – middle leg; D – hind leg; E–G – aedeagus in ventral (E), lateral (F) and dorsal (G) view.

FMNH); 1.5km n Punakaiki, 50m 19.xii.1984–20.i.1985 2°hdwd.-nikau forest A.Newton/M.Thayer 720 // berl, leaf & log litter, forest floor (1 ♂ 3 ♀♀ FMNH); Loop Line Road Scen. Reserve, sse Kumara, 160m, 8–9.i.1985 podocarp-hdwd. forest A.Newton/M.Thayer 730 // flight intercept (window) trap (1 ♂ FMNH); Okuku Ck., 11.3km SSE Kumara 60m 18–22.iii.1980 podocarp-broadlf. A.Newton/M.Thayer // berl, leaf & log litter, forest floor (1 ♀ FMNH); 7.7km SSE Kumara 90m 18–22.iii.80 podocarp-broadlf. A.Newton/M.Thayer // berl, leaf & log litter, forest floor (2 ♀♀ FMNH); L.Mahinapua Scen.Res. 30m 16–22.iii.1980 podocarp-mixed broadleaf A.Newton/M.Thayer // berl, leaf & log litter, forest floor (1 ♂ FMNH).

**Diagnosis.** Males of this species can be distinguished from other *Adalmus* species by the following characters: profemur convex at distal 1/3 and clavate (Fig. 7B); pro-trochanter unmodified, mesotrochanter with distinct spine (Fig. 7C), metatrochanter unmodified and with several setae (Fig. 7D); left paramere thick, blunt, shorter than right paramere, right paramere slender, long, and sharp; median lobe elongate and slender, nearly as long as basal bulb, curved, smooth, apex falciform (Figs 7E–G).

**Redescription.** BL 1.94–2.15 mm (FBL 1.50–1.60 mm, 7 specimens measured); body, antenna, and legs reddish-brown, maxillary palpus and tarsi yellowish-brown; body pubescent (Fig. 7A).

*Head* slightly broader than long (HL : HW = 35 : 40), widest across eyes, eyes convex, rostrum broad (HW : RW = 40 : 24), ridges of antennal tubercle parallel, depression between ridge of antennal tubercle weakly impressed, apex of rostrum strongly projecting, anterior margin of clypeus not visible in dorsal view; antennal length approximately 1.00–1.05 mm, antennomere I approximately 2.3 times longer than II, antennomere II longer and broader than III–VIII, antennomeres III–VIII of similar length, antennomeres IX–XI forming indistinct club, XI approximately twice as long as broad.

*Thorax.* Prothorax slightly wider than head (HW : PW = 40 : 48), subhexagonal (PL : PW = 51 : 52), broadest at anterior 2/5, gently narrowing from middle, narrowest at anterior margin.

*Elytra* broader than pronotum (EW : PW = 76 : 52), slightly broader than long (EL : EW = 65 : 76); with sutural striae; weak impression at elytral foveae; subhumeral foveae present, not visible in dorsal view.

**Legs.** Protrochanter with smooth posterior margin; profemur weakly rugose on ventral side, convex at distal 1/3 and clavate; mesotrochanter with distinct spine (Fig. 7C); metatrochanter with several setae on posterior margin; tibiae and femora moderately long, subequal in length.

**Aedeagus** asymmetric, 0.38 mm long, with diaphragm and basal stem; parameres asymmetric, left paramere thick, blunt, shorter than right paramere, right paramere slender, long, and apically pointed; median lobe elongate and slender, nearly as long as basal bulb, curved, smooth, with falciform apex.

**Sexual dimorphism.** Females have the metatrochanter lacking distinct setae.

**Comments to classification.** Images of the holotype of *Adalmus rugiceps* taken by one of us (J.-S. Park) which confirms that this species is a member of the genus *Adalmus* based on the diagnostic characters given above. The unique swollen profemora of this species was noted as a diagnostic character of this species when the holotype was examined (D. S. Chandler, pers. observ.).

**Distribution.** New Zealand (South Island: BR, NN, WD; Fig. 10).

### *Adalmus serrilumbus* Byeon & Chandler, sp. nov.

(Figs 8, 10)

**Type material.** HOLOTYPE: ♂ (slide mounted, NZAC): "NEW ZEALAND: WD 1.8km n Punakaiki, 80m 19.xii.1984-20.i.1985 hdwd. for. with nikau A.Newton/M.Thayer 718 // flight intercept (window) trap // NZ Arthropod Collection Private Bag 92170 Auckland New Zealand NZAC04261145".

**Diagnosis.** Male of this species can be distinguished from other *Adalmus* species by the following characters: body size longer than 2.2 mm; antennomere I approximately 2.8 times as long as II; rostrum narrow (HW : RW = 52 : 20); protrochanter with small spine (Fig. 8L), mesotrochanter weakly convex (Fig. 8M), metatrochanter with distinct curved spine (Fig. 8N); left paramere thick, S-shaped, with thin, short, and curved spine, right paramere curved, apex bifurcated; apex of median lobe curved and serrate (Figs 8O, P).

**Description.** BL 2.40 mm (FBL 1.65 mm); body blackish-brown, antenna, and legs reddish-brown, maxillary palpus and tarsi yellowish-brown; body pubescent.

**Head** slightly broader than long (HL : HW = 42 : 52), widest at anterior 2/3, eyes convex, impression between ridge of antennal tubercles deep, ridge of antennal tubercles parallel; apex of rostrum weakly projecting, clypeus barely visible in dorsal view, temple as long as gena, gena nude in dorsal view; antennal length 0.97 mm, antennomere I

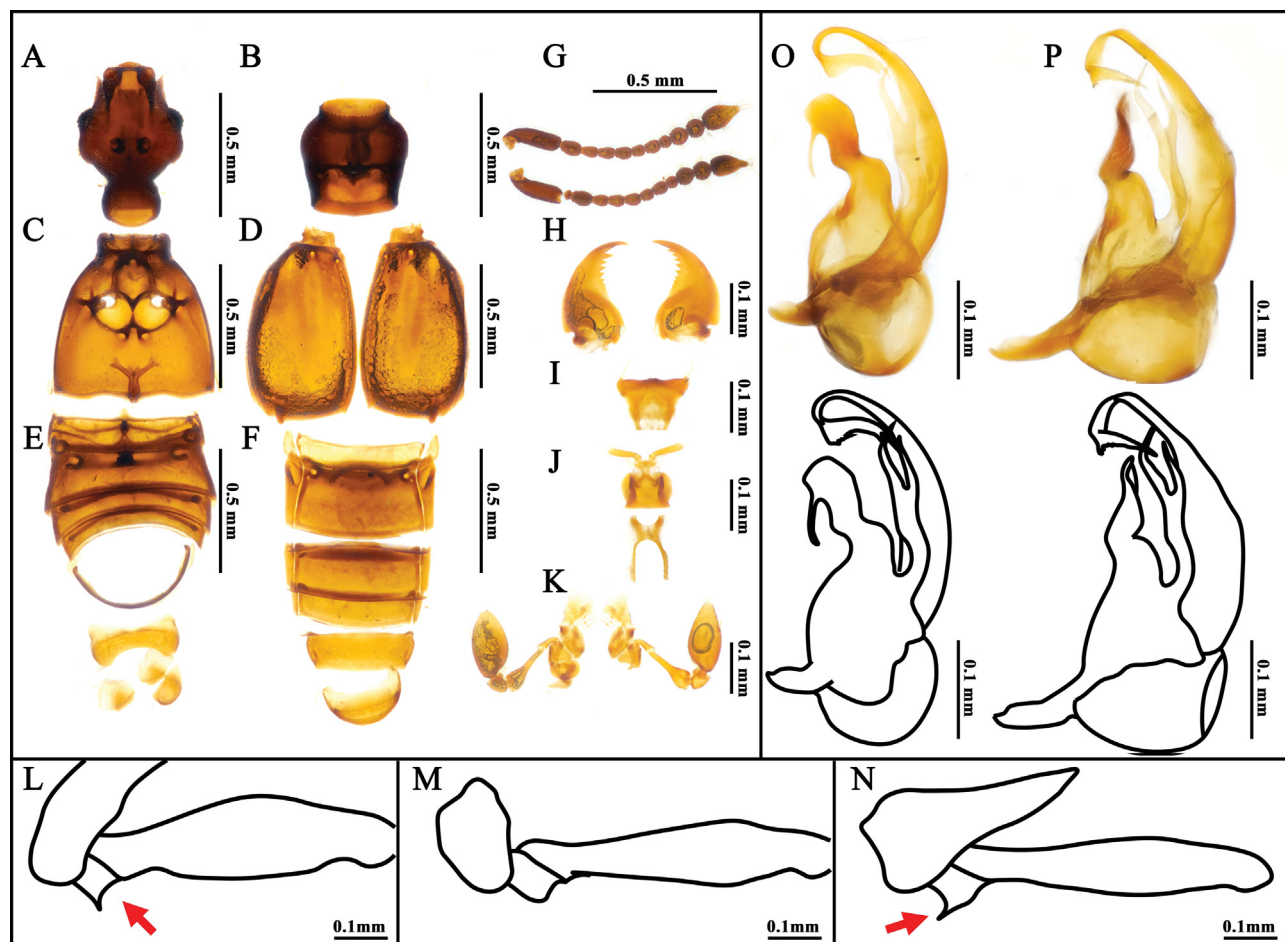


Fig. 8. *Adalmus serrilumbus* sp. nov. A – head; B – prothorax; C – meso- and metathorax; D – elytra; E – abdominal ventrites; F – abdominal tergites; G – antennae; H – mandibles; I – labrum; J – labium; K – maxillae; L – front leg; N – middle leg; M – hind leg; O–P – aedeagus in ventral (O) and lateral (P) view.

approximately three times as long as II, antennomere II longer and broader than III–VIII, antennomeres III–V of similar length, VI and VIII of similar length, IX and X of similar length, antennomeres IX–XI forming indistinct club, XI approximately 1.7 times as long as broad.

**Thorax.** Prothorax slightly broader than head (HW : PW = 41 : 44), subhexagonal (PL : PW = 47 : 44), broadest at anterior 2/5, narrowest at base.

**Elytra** slightly broader than long (EL : EW = 65 : 74), with sutural striae, weak impression at basal elytral foveae, subhumeral foveae present, not visible in dorsal view.

**Legs.** Protrochanter with small spine; profemur weakly rugose on ventral side; mesotrochanter weakly convex, metatrochanter with distinct curved spine; tibiae and femora of similar length, moderately long.

**Aedeagus** asymmetric, 0.37 mm long, with diaphragm and basal stem; parameres asymmetric, left paramere thick, S-shaped, with thin, short, and curved spine, right paramere curved, apex bifurcated; apex of median lobe curved and serrate.

**Sexual dimorphism.** Female unknown.

**Etymology.** The specific epithet is a noun in the nominative case, a combination of the Latin words *serratus* ('serrate', masculine) and *lumbus* ('genitalia', masculine), and refers to the serrate apex of the median lobe.

**Distribution.** New Zealand (South Island: WD; Fig. 10).

### *Adalmus velutinus* Reitter, 1885

(Figs 9, 10)

*Adalmus velutinus* Reitter, 1885: 338. Type locality: Greymouth.

*Adalmus velutinus*: RAFFRAY (1890: 107), RAFFRAY (1904: 603), RAFFRAY (1908: 117), RAFFRAY (1911: 46); NEWTON & CHANDLER (1989: 30); NOMURA & LESCHEN (2006: 246).

*Dalmisus batrisodes* Sharp, 1886: 382. Type locality: Greymouth; **syn. nov.**

*Dalmisus batrisodes*: BROUN (1893: 1048); RAFFRAY (1890: 43), RAFFRAY (1904: 582), RAFFRAY (1908: 108), RAFFRAY (1911: 43); HUTTON (1904: 178); HUDSON (1922: 365); NEWTON & CHANDLER (1989: 27); NOMURA & LESCHEN (2006: 246, Fig. 23).

*Plectomorphus longipes* Broun, 1912: 412. Type locality: Greymouth; **syn. nov.**

*Plectomorphus longipes*: HUDSON (1923: 366); NOMURA & LESCHEN (2006: 250).

*Plectomorphus longiceps* Broun, 1913: 200. Type locality: Greymouth; **syn. nov.**

*Plectomorphus longiceps*: HUDSON (1923: 366); NOMURA & LESCHEN (2006: 250).

**Type material.** *Adalmus velutinus*. LECTOTYPE (here designated): ♂ (MNHN): "Nouv. Zélande / *Adalmus* m. *velutinus* [♂] Nouv. Zeal. 1885 / Museum Paris 1917 Coll. A. Raffray / [red label] TYPE / *A. velutinus* A. Raffray det / LECTOTYPE *Adalmus velutinus* Reitter sel. DSChandler '24 [yellow label]".

*Dalmisus batrisodes*. LECTOTYPE: ♂ (BMNH): "*Dalmisus batrisodes* Type ex. Parte D.S. [written on large card with specimen] / Greymouth [red line] New Zealand Helms. / Sharp Coll. 1905-313 / LECTOTYPE *Dalmisus batrisodes* Sharp sel. DSChandler '24 [yellow label]". PARALLECTOTYPE: ♀ (BMNH): "*Dalmisus batrisodes* Type D.S. Greymouth

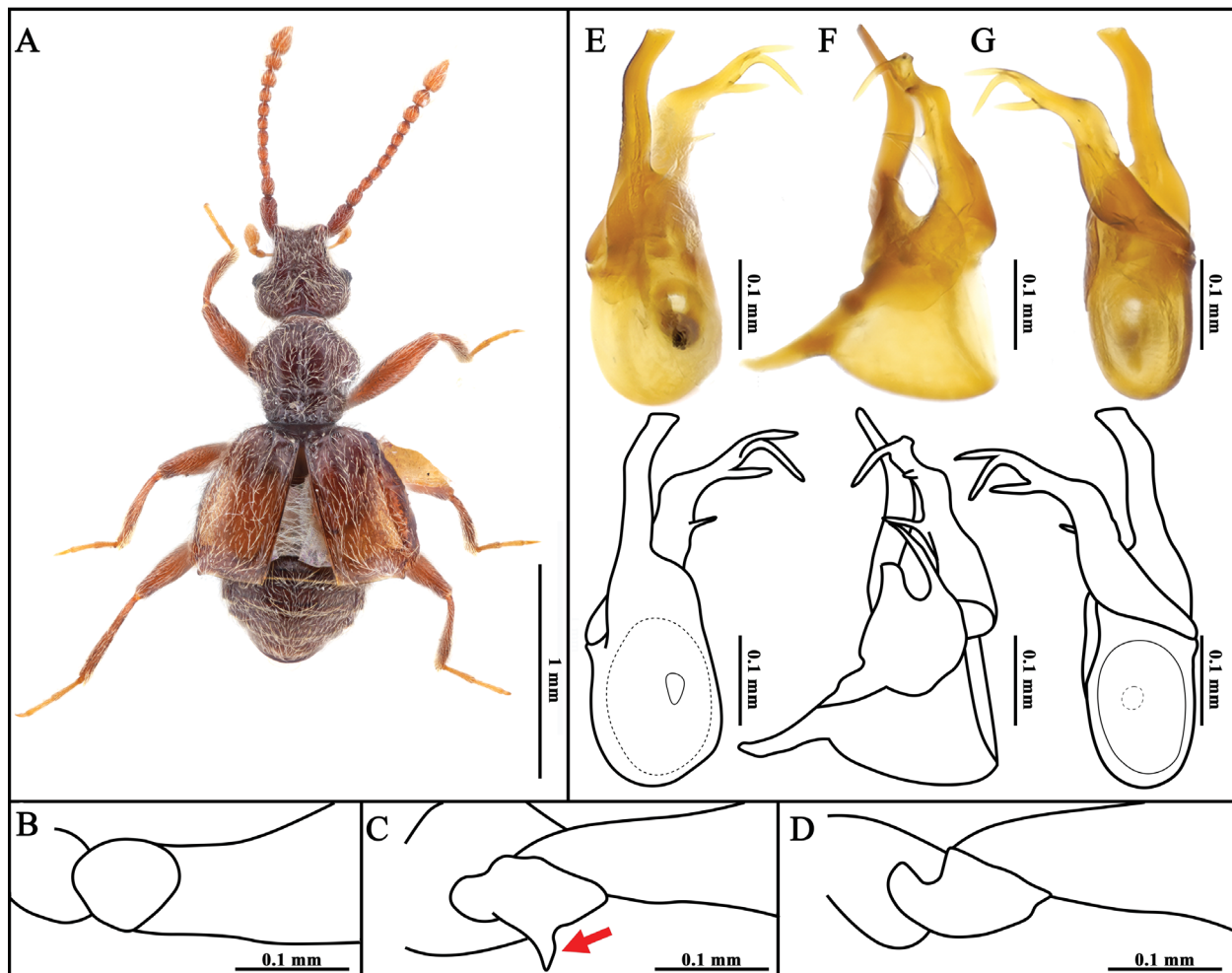


Fig. 9. *Adalmus velutinus* Reitter, 1885. A – male dorsal habitus; B – front leg; C – middle leg; D – hind leg; E–G – aedeagus in ventral (E), lateral (F) and dorsal (G) view.

Helms [written on large card with specimen] / Type H.T. [orange-bordered circle] / Greymouth [red line] Newlúa5! Zealand Helms. / Sharp Coll. 1905-313".

*Plectomorphus longipes*. HOLOTYPE: ♀ (BMNH): "Type [red-bordered disc] / 3213 / Greymouth [red line] Greymouth - Lewis. / *Plectomorphus longipes*".

*Plectomorphus longiceps*. HOLOTYPE: ♀ (BMNH): "Type [orange-bordered disc] / Greymouth [red line] New Zealand. Helms. / Sharp Coll. 1905-313. / *Plectomorphus longiceps*. [♀]".

**Additional material examined.** SOUTH ISLAND: NN [Nelson]: Slaters Road, 0.7 km s Whangamoia Saddle, 410m 13.xii.1984-4.i.1985 *Nothofagus* spp forest A.Newton/M.Thayer 703 // flight intercept (window) trap (16 ♂♂ 7 ♀♀ FMNH); same locality label, but: Compared with type of Broun *Plectomorphus longipes* by DSChandler [green label] (1 ♂, genitalia dissected, DSC). SD [Marlborough Sounds]: Tennyson Inlet, east side Duncan Bay, 30m 15.xii.1984-5.i.1985 podo-*Nothofagus* for. A.Newton/M.Thayer 709 // flight intercept (window) trap (1 ♀ FMNH). Tennyson Inlet, west side Te Mako Bay, 125m 15.xii.1984-5.i.1985 *Nothofagus*-podo-hdwd. A.Newton/M.Thayer 710 // flight intercept (window) trap (1 ♂, slide mounted, 1 ♂ 8 ♀♀ FMNH); same locality, but: Compared with type of Sharp '98 *Dalmisus batrisodes* by DSChandler [green label] // Compared with type of Broun '98 *Plectomorphus longiceps* by DSChandler [green label] (1 ♀ DSC).

**Diagnosis.** Males of this species can be distinguished from other *Adalmus* species by the following combination of characters: antennomere I approximately 2.1–2.5 times longer than wide (Fig. 9A); mesotrochanter with distinct spine (Fig. 9C; arrow), pro- and metatrochanters unmodified (Figs 9B, D); left paramere thick, long, with apex blunt; right paramere slender, short, with apex sharp; median lobe curved, with two spines at middle and apical 1/3, apex bifurcate (Figs 9E–G).

**Redescription.** BL 2.10–2.29 mm (FBL 1.67–1.76 mm, 15 specimens measured); body color blackish-brown, legs, antenna, maxillary palpus, and tarsi reddish-brown; body pubescent (Fig. 9A).

**Head** slightly broader than long (HL : HW = 43 : 48), widest across eyes, eyes convex, rostrum approximately half head width (HW : RW = 48 : 27), tempora distinct, longer than eyes in dorsal view and oblique; antennal length approximately 1.00–1.04 mm, antennomere I approximately 2.1–2.5 times longer than wide, antennomere II longer and broader than III–VIII, antennomeres IX–XI forming indistinct club, XI 1.5 times as long as broad.

**Thorax.** Prothorax slightly broader than head (HW : PW = 48 : 51), subhexagonal (PL : PW = 51 : 53), broadest at anterior 2/5, sharply narrowing at middle, and narrowest at anterior margin.

**Elytra** broader than pronotum (EW : PW = 75 : 51), slightly broader than long (EL : EW = 75 : 81); with sutural striae; basal impressions at elytral foveae, subhumeral foveae present.

**Legs.** Profemur rugose on ventral side; mesotrochanter with distinct spine, pro- and metatrochanters with smooth posterior margins, tibiae and femora similar in lengths, moderately long.

**Aedeagus** asymmetric, 0.49 mm long, with diaphragm and basal stem; parameres symmetric, left paramere thick, long, with apex blunt, right paramere slender, short, with apex sharp; median lobe curved, with two spines at middle and apical 1/3, apex bifurcate.

**Sexual dimorphism.** Female has a mesotrochanteral spine less developed than that of male.

**Comments to classification.** *Dalmisus* syn. nov. is placed here as a junior subjective synonym of *Adalmus*, and *Dalmisus batrisoides* syn. nov. is considered a junior subjective synonym of *Adalmus velutinus*, based on the examination of types by the second author. In addition, the types of *Plectomorphus longiceps* syn. nov. and *P. longipes* syn. nov. are conspecific with *A. velutinus* (D. S. Chandler, pers. observ.), and thus, they are also considered junior subjective synonyms of *A. velutinus*. The type locality for all four species is Greymouth, South Island.

**Distribution.** New Zealand (South Island: BR, NN, SD; Fig. 10).

## Discussion

The species of *Adalmus* have been collected from forest types ranging from those dominated by *Leptospermum* and *Nothofagus* to those with hardwoods intermixed with Nikau palm, kauri, and other podocarps. While specific microhabitat information is unknown, specimens of *Adalmus* have been taken primarily by use of flight intercept traps or by sifting leaf and log litter and using Berlese funnels for their extraction. Few specimens were taken from moss (listed as *Sphagnum*), indicating that the genus is not a specialist of this habitat as is so for some other New Zealand pselaphines (SHEN et al. 2020). Most specimens were taken from low elevations apart from those of *A. bullerensis* sp. nov. and *A. puberilumbus* sp. nov., which are known from a larger number of specimens and were collected at both low and relatively high elevations up to about 900 m.

The geographic distribution of *Adalmus* spans both islands and none have been recorded from the offshore islands. Interestingly, there is overlap among the distributions of each species, up to three species being found in Marlborough Sounds (*A. bullerensis* sp. nov., *A. puberilumbus* sp. nov., and *A. velutinus*). The wide gaps in known distributions from most of the North Island, and a large portion of the South Island indicates that these areas are poorly collected or that there may be additional specimens tucked away in as yet unsorted material, especially in the massive collection of ethanol material that remains unstudied in the FMNH and NZAC. While species are endemic to one of the major islands, until further study, it would be unwise to produce conclusions treating the biogeographic history and distribution of *Adalmus*.

Apart from a review of ant inquiline (NOMURA & LESCHEN 2015), this is the first revision of a free-living genus of New Zealand Trichonychini. Based on these two studies, it is clear that the species composition of existing genera is commonly a mix of described and undescribed genera and that their correct placement within the subtribes and their phylogenetic relationships remains challenging.

The pattern of ventral thoracic foveae is the common pattern for the Panaphantina, with only variation in presence/absence of the notopleural foveae being critical for identification of some genera (CHANDLER 2001). *Adalmus* does not have an obvious connection with the Australian fauna, though it shares features with other New Zealand genera. The following characters are shared with *Euglyptus*

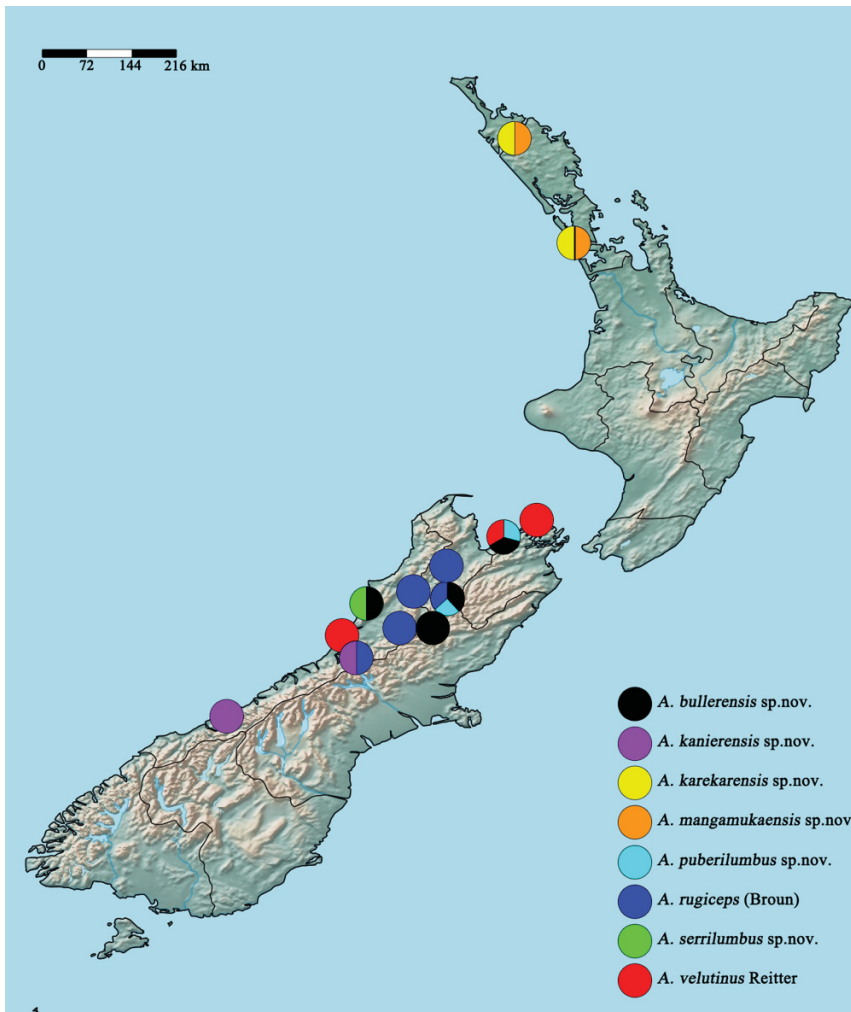


Fig. 10. Collection localities in New Zealand.

Broun, 1893: elongate flattened head with a broad rostrum (reduced in some *Euglyptus*), lack of a distinct vertexal sulcus on the head, prominent antennal tubercles, lack of notopleural foveae on the prothorax, and eleventh antennomeres with apical half cone-shaped (with apex often aciculate for some *Euglyptus*). The two genera may be separated by the presence of long marginal ridges extending posteriorly from the antennal tubercles and the prothorax being as long as broad for *Adalmus*, while *Euglyptus* has isolated, prominent and short antennal tubercles and the pronotum is clearly elongate. Two potential relatives of these two genera that have the notopleural foveae present are *Dalma* Sharp, 1874 and *Whitea* (this is presently a complex of mixed genera); otherwise, they share with *Adalmus* and *Euglyptus* the median prosternal carina, terminal antennomere with the apical half cone-shaped, head lacking a distinct vertexal sulcus, and prominent antennal tubercles. Furthermore, *Whitea* has the rostrum with distinct ridge, 2–3 basal foveae are present on each elytron together with the subhumeral fovea and a deep lateroapical cleft are all shared with *Adalmus* and *Euglyptus*.

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