

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Insecta Mundi

Center for Systematic Entomology, Gainesville,
Florida

7-29-2022

Synopsis of the tribe Amarotypini in New Zealand (Coleoptera: Carabidae)

André Larochelle

Marie-Claude Larivière

Follow this and additional works at: <https://digitalcommons.unl.edu/insectamundi>



Part of the [Ecology and Evolutionary Biology Commons](#), and the [Entomology Commons](#)

This Article is brought to you for free and open access by the Center for Systematic Entomology, Gainesville, Florida at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Insecta Mundi by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

A journal of world insect systematics

INSECTA MUNDI

0942

Synopsis of the tribe Amarotypini in New Zealand
(Coleoptera: Carabidae)

André Larochelle and Marie-Claude Larivière

New Zealand Arthropod Collection, Manaaki Whenua-Landcare Research
Private Bag 92170, Auckland 1142, New Zealand



Amarotypus edwardsii Bates, 1872

Date of issue: July 29, 2022

Larochelle A, Larivière M-C. 2022. Synopsis of the tribe Amaratypini in New Zealand (Coleoptera: Carabidae). *Insecta Mundi* 0942: 1–30.

Published on July 29, 2022 by
Center for Systematic Entomology, Inc.
P.O. Box 141874
Gainesville, FL 32614-1874 USA
<http://centerforsystematicentomology.org/>

INSECTA MUNDI is a journal primarily devoted to insect systematics, but articles can be published on any non-marine arthropod. Topics considered for publication include systematics, taxonomy, nomenclature, checklists, faunal works, and natural history. *Insecta Mundi* will not consider works in the applied sciences (i.e. medical entomology, pest control research, etc.), and no longer publishes book reviews or editorials. *Insecta Mundi* publishes original research or discoveries in an inexpensive and timely manner, distributing them free via open access on the internet on the date of publication.

Insecta Mundi is referenced or abstracted by several sources, including the Zoological Record and CAB Abstracts. *Insecta Mundi* is published irregularly throughout the year, with completed manuscripts assigned an individual number. Manuscripts must be peer reviewed prior to submission, after which they are reviewed by the editorial board to ensure quality. One author of each submitted manuscript must be a current member of the Center for Systematic Entomology.

Guidelines and requirements for the preparation of manuscripts are available on the *Insecta Mundi* website at <http://centerforsystematicentomology.org/insectamundi/>

Chief Editor: David Plotkin, insectamundi@gmail.com

Assistant Editor: Paul E. Skelley, insectamundi@gmail.com

Layout Editor: Robert G. Forsyth

Editorial Board: Davide Dal Pos, Oliver Keller, M. J. Paulsen

Founding Editors: Ross H. Arnett, Jr., J. H. Frank, Virendra Gupta, John B. Heppner, Lionel A. Stange, Michael C. Thomas, Robert E. Woodruff

Review Editors: Listed on the *Insecta Mundi* webpage

Printed copies (ISSN 0749-6737) annually deposited in libraries

Florida Department of Agriculture and Consumer Services, Gainesville, FL, USA

The Natural History Museum, London, UK

National Museum of Natural History, Smithsonian Institution, Washington, DC, USA

Zoological Institute of Russian Academy of Sciences, Saint-Petersburg, Russia

Electronic copies (Online ISSN 1942-1354) in PDF format

Archived digitally by Portico

Florida Virtual Campus: <http://purl.fcla.edu/fcla/insectamundi>

University of Nebraska-Lincoln, Digital Commons: <http://digitalcommons.unl.edu/insectamundi/>

Goethe-Universität, Frankfurt am Main: <http://nbn-resolving.de/urn/resolver.pl?urn:nbn:de:hebis:30:3-135240>

Copyright held by the author(s). This is an open access article distributed under the terms of the Creative Commons, Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original author(s) and source are credited. <http://creativecommons.org/licenses/by-nc/3.0/>

Synopsis of the tribe Amarotypini in New Zealand (Coleoptera: Carabidae)

André Larochele

New Zealand Arthropod Collection, Manaaki Whenua-Landcare Research
Private Bag 92170, Auckland 1142, New Zealand
LarocheleAndre@hotmail.com

Marie-Claude Larivière

New Zealand Arthropod Collection, Manaaki Whenua-Landcare Research
Private Bag 92170, Auckland 1142, New Zealand
LariviereM@landcareresearch.co.nz

Abstract. The tribe Amarotypini (Coleoptera: Carabidae: Migadopinae) is revised for New Zealand. Three genera and fourteen species are recognized.

Two genera and thirteen species are described as new: *Amarophilus* Larochele and Larivière **new genus**, *Amarophilus lomondensis* Larochele and Larivière **new species**, *Amarophilus otagoensis* Larochele and Larivière **new species**, *Amarophilus rotundicollis* Larochele and Larivière **new species**, *Amarophilus wanakensis* Larochele and Larivière **new species**, *Amarotypus fiordlandensis* Larochele and Larivière **new species**, *Amarotypus glasgowensis* Larochele and Larivière **new species**, *Amarotypus murchisonorum* Larochele and Larivière **new species**, *Amarotypus simoninensis* Larochele and Larivière **new species**, *Amarotypus takaheensis* Larochele and Larivière **new species**, *Amaroxenus* Larochele and Larivière **new genus**, *Amaroxenus arnaudensis* Larochele and Larivière **new species**, *Amaroxenus glacialis* Larochele and Larivière **new species**, *Amaroxenus huttensis* Larochele and Larivière **new species**, *Amaroxenus kahurangiensis* Larochele and Larivière **new species**.

A revision of all taxa is provided. Descriptions, identification keys, illustrations of male genitalia, habitus photos, distributional data and maps are given. Information on ecology, biology, dispersal power, and collecting techniques is included for each species.

Key words. Taxonomy, new genera and species, keys, geographic distribution, ecology, biology, dispersal power.

ZooBank registration. urn:lsid:zoobank.org:pub:6BBC7A99-0736-44D1-BAD1-3C719F9A69C2

Introduction

The tribe Amarotypini (Carabidae: Migadopinae) is restricted to New Zealand (North Island, South Island, and Stewart Island; Larochele and Larivière 2001) and Australia (Tasmania; Baehr 2009). Members of this group occur in lowland to subalpine forests or subalpine to alpine tussock grasslands and fellfields.

The New Zealand Amarotypini, as catalogued by Larochele and Larivière (2001), contained the genus *Amarotypus* described by Bates (1872) and based on a single endemic species, *Amarotypus edwardsii*.

The current taxonomic revision adds two genera to the fauna (*Amarophilus* new genus and *Amaroxenus* new genus) and deals with 14 endemic species, 13 of which are new to science.

This synopsis provides a detailed treatment of the taxonomy of New Zealand Amarotypini, identification keys to all taxa, and information on species distribution, ecology, biology, dispersal power, and collecting techniques. Male genitalia are described and illustrated, and habitus photos are provided for most taxa for the first time.

This revision is another step in the authors' goal of attaining a comprehensive understanding of the New Zealand carabid fauna within a reasonable time frame, and of making large amounts of information available for practical use by a wide range of users. It follows the publication of a catalogue of New Zealand Carabidae (Larochele and Larivière 2001), a revision of the tribe Harpalini (Larochele and Larivière 2005), a synopsis of supraspecific carabid taxa (Larochele and Larivière 2007), a synopsis of species of the tribes Amarotypini,

Cicindelini, Clivinini, Migadopini, Pamborini, Rhysodini, Moriomorphini, and Trechini (Larochelle and Larivière 2013), a synopsis of the genus *Bembidion* Latreille (Larochelle and Larivière 2015), a taxonomic supplement (2001 to 2015) to the 2001 catalogue (Larochelle and Larivière 2016), a synopsis of the tribe Zolini (Larochelle and Larivière 2017), and a synopsis of the tribe Platynini (Larochelle and Larivière 2021).

Materials and Methods

This study is based on the examination of about 800 specimens from several hundred New Zealand localities. Most of this material is deposited in the New Zealand Arthropod Collection (NZAC), Auckland.

Other specimens were kindly provided by the following museums and collections: Auckland War Memorial Museum, Auckland, New Zealand (AMNZ); Entomology Research Collection, Lincoln University, Lincoln, New Zealand (LUNZ); John Nunn private collection, Dunedin, New Zealand (JNNZ; recently deposited in NZAC); Museum of New Zealand Te Papa Tongarewa, Wellington, New Zealand (MONZ). Type material has been deposited in some of the above collections.

A number of amarotypine species are represented by a small number of specimens in New Zealand collections, due to their occurrence in remote subalpine and alpine habitats.

The morphological terminology used in this work generally follows Larochelle and Larivière (2007, 2013, 2015, 2017, 2021). All descriptions are based on the same list of characters so as to be fully comparative between taxa. The microsculpture (Fig. 1–4) of head, pronotum, and elytra was examined in great detail and proved highly useful in discriminating taxa. The male genitalia, also highly diagnostic at the species level, were dissected across numerous populations of each taxon.

In the identification keys to genera and species, additionally helpful but not necessarily exclusive characters are provided in brackets. The taxonomic arrangement of genera and species, and the sequence of habitus photos and illustrations of male genitalia, follow the order of taxa in the identification keys.

Holotype data are given for all taxa and listed in this order: type status followed by sex, acronym of entomological collection or museum serving as repository, and original label data with a forward slash (/) indicating a different label.

The two-letter abbreviation codes of Crosby et al. (1976, 1998) for areas of New Zealand (Fig. 35) were used to record geographic distributions. Full distributional information is given for all species, except for *Amarotypus edwardsii* which is distributed throughout New Zealand. Appendix 1 provides decimal degree coordinates for localities cited in the text. Maps summarizing species distribution are alphabetically arranged (Fig. 36–49).

Notes on the ecology, biology, and dispersal power are based on an analysis and synthesis of specimen label data and field observations by the authors. The terminology and style of presentation follow Larochelle and Larivière (2001, 2003).

Systematics

Tribe Amarotypini

Description (New Zealand). Body length 4.6–7.2 mm; not pedunculate. Stout or slender. **Head.** Wide. Labrum emarginate anteriorly, with six setiferous punctures. Eyes present; a single setiferous puncture inserted medially or postmedially on inner side of each eye, close to or distant from it. Clypeus with a setiferous puncture on each side. Frontal furrows shallow or deep, subparallel or convergent posteriorly. Antennae filiform; segments 1–4 with a few setae, 5–11 densely pubescent; segments 3–10 with verticillate setae. Mentum: medial tooth present, bifid apically; circular foveae absent; two setae present. Mentum-submentum suture present. Submentum with four or six setae. Ligula with four setae. Palpi: terminal segment obliquely truncate at apex; maxillary and labial segments densely setulose; penultimate labial segment with two long setae on anterior margin. **Thorax.** Pronotum without lateral setiferous punctures. Laterobasal foveae single or double. Base slightly emarginate, depressed between laterobasal foveae and partially covering elytral base. Prosternum glabrous apically, not compressed

into a vertical ridge. **Legs.** Moderately long or very long. Protibiae without outer apical prolongation, with dorsal longitudinal groove. Metatibiae without a group of apical setae. Tarsi glabrous dorsally; pro- and mesotarso-meres 1–4 of both sexes dilated and spongiose ventrally; metatarsomeres 4 bilobed apically; metatarsomeres 5 pubescent ventrally; claws entire ventrally; unguitactor plate visible between tarsal claws, long, setiform. **Elytra.** Fused along suture, with hindwings vestigial (free along suture, with hindwings more developed in *Amarotypus edwardsii*). Striae either present, consisting of impressed lines, or replaced by rows of punctures; striae or rows obsolete apically. Scutellar striole very long (moderately long in *Amarotypus simoninensis*). Stria 1 not recurrent at apex. Stria 3 or row 3 without setiferous punctures or with one to four punctures. Umbilicate series with 12 to 16 setiferous punctures. Radial field without fine dense pubescence. Epipleura simple (without inner fold or plica) near apex. Subapical sinuations absent. Apex invisible dorsally. **Abdomen.** Sterna IV–VII of both sexes with two long apical ambulatory setae. **Aedeagus.** Lateral view: slightly to strongly arcuate, widened in apical half. Dorsal view: asymmetrical (ostium of membranous area deflected to the left or to the right). Parameres: left paramere longer, without setae; right paramere shorter, with a fringe of ventral setae. **Gonocoxites.** Right and left pair close to or distant from each other; gonocoxite 1 fused to gonocoxite 2; gonocoxite 1 larger, with or without rows of spines; gonocoxite 2 smaller, digitiform, with a single subapical seta or two subapical setae.

References. Erwin 1985: 468 (description); Deuve 1993: 132 (morphology of female reproductive system); Arndt 1998: 174 (classification); Liebherr and Will 1998: 142 (phylogeny, classification); Laroche and Larivière 2001: 40 (catalogue), 2007: 29 (description).

Alphabetical checklist of taxa

Valid genus- and species-group taxa are listed alphabetically (E = Endemic to New Zealand).

Tribe *Amarotypini*

Genus *Amarophilus* Laroche and Larivière^E, new genus

lomondensis Laroche and Larivière^E, new species

otagoensis Laroche and Larivière^E, new species

rotundicollis Laroche and Larivière^E, new species

wanakensis Laroche and Larivière^E, new species

Genus *Amarotypus* Bates, 1872^E

edwardsii Bates, 1872^E

fiordlandensis Laroche and Larivière^E, new species

glasgowensis Laroche and Larivière^E, new species

murchisonorum Laroche and Larivière^E, new species

simoninensis Laroche and Larivière^E, new species

takaheensis Laroche and Larivière^E, new species

Genus *Amaroxenus* Laroche and Larivière^E, new genus

arnaudensis Laroche and Larivière^E, new species

glacialis Laroche and Larivière^E, new species

huttensis Laroche and Larivière^E, new species

kahurangiensis Laroche and Larivière^E, new species

Key to genera of *Amarotypini* (New Zealand)

1. Setiferous puncture of head (Fig. 5) close to eye. Submentum with four setae. Laterobasal foveae of pronotum double. Gonocoxite (Fig. 8) 1 stout, with rows of spines, gonocoxite 2 with two subapical setae. [Body stout (Fig. 21–26), length 4.6–7.0 mm; frontal furrows shallow, subparallel posteriorly; mostly lowland to subalpine forests; North Island, South Island, and Stewart Island] *Amarotypus* Bates
- Setiferous puncture of head (Fig. 6–7) distant from eye. Submentum with six setae. Laterobasal foveae of pronotum single. Gonocoxite (Fig. 9–10) 1 slender, without rows of spines, gonocoxite 2 with a single subapical seta. [Subalpine to alpine tussock grasslands and fellfields; South Island] 2

- 2(1). Body (Fig. 27–30) slender. Pronotum cordate or subcordate. Elytra subovate. Legs very long. Frontal furrows very deep, convergent posteriorly (Fig. 7). Aedeagus (Fig. 15–17; in lateral view) stout, multistriate in apical half (not multistriate in *A. glacialis*). Right and left pair of gonocoxites close to each other, gonocoxite 1 (Fig. 9) subparallel. [Body length 5.3–6.8 mm; setiferous puncture of head inserted postmedially on inner side of each eye; throughout the South Island] ***Amaroxenus* Larochelle and Larivière, new genus**
- Body (Fig. 31–34) stout. Pronotum rounded or trapezoid. Elytra ovate. Legs moderately long. Frontal furrows (Fig. 6–7) moderately deep, subparallel posteriorly (very deep, convergent posteriorly in *A. wanakensis*). Aedeagus (Fig. 18–20; in lateral view) slender, not multistriate in apical half. Right and left pair of gonocoxites distant from each other, gonocoxite 1 (Fig. 10) subovate. [Body length 5.8–7.2 mm; setiferous puncture of head inserted medially or postmedially on inner side of each eye; southern South Island (CO, OL)] ***Amarophilus* Larochelle and Larivière, new genus**

Genus *Amarotypus* Bates, 1872

Fig. 8, 11–14, 21–26, 40–45

Amarotypus Bates, 1872: 50.

Type species. *Amarotypus edwardsii* Bates, 1872, by monotypy.

Description. Body length 4.6–7.0 mm; stout, ovate or subovate; forebody as wide as elytra. Color dark, rufopiceous, rufotestaceous or piceous black. Metallic luster present (aeneous) or absent. Dorsal surface mostly glabrous. **Head.** Mandibles short, strongly curved. Eyes slightly or moderately convex; setiferous puncture inserted medially on inner side of each eye, close to it. Frontal furrows shallow, subparallel posteriorly (Fig. 5). Submentum with four setae. **Thorax.** Pronotum very wide, trapezoid or subrectangular. Laterobasal foveae double. Pronotal base as wide as elytral base. **Legs.** Moderately long. Pro- and mesotarsomeres 1–4 of both sexes moderately dilated (strongly dilated in *A. murchisonorum*). **Elytra.** Oblong or ovate. Fused along suture (hindwings poorly developed, vestigial) or free along suture (hindwings more developed, 65–75% of elytral length in *A. edwardsii*). Shoulders well developed, obtuse. Striae present, consisting of impressed lines, or replaced by rows of punctures; stria 3 or row 3 with one to four setiferous punctures. Scutellar striole very long, about two-thirds of elytral length (moderately long, about a quarter of elytral length in *A. simoninensis*). Intervals slightly convex (subdepressed in *A. edwardsii*). Umbilicate series with 13–15 setiferous punctures. **Aedeagus.** Lateral view (Fig. 11–14): slightly to strongly arcuate, slender (stout in *A. edwardsii*), not multistriate in apical half. Dorsal view: asymmetrical (ostium of membranous area deflected to the left or to the right). Parameres: right paramere with a ventral fringe of long setae. **Gonocoxites.** Right and left pair close to each other; gonocoxite 1 stout, with rows of spines, gonocoxite 2 with two subapical setae (Fig. 8).

References. Larochelle and Larivière 2001: 40 (catalogue), 2007: 29 (description, ecology, geographic distribution, references).

Remarks. The morphological characters unifying species of *Amarotypus* are: setiferous puncture of head inserted medially on inner side of each eye, close to it; frontal furrows shallow, subparallel posteriorly; submentum with four setae; laterobasal foveae of pronotum double; right and left pair of gonocoxites close to each other, gonocoxite 1 stout, with rows of spines, gonocoxite 2 with two subapical setae. Members of this genus usually occur in lowland to subalpine forests of the North, South, and Stewart Islands. Two species have been found in alpine tussock grasslands.

Key to species of *Amarotypus*

1. Body (Fig. 21–24) ovate. Pronotum trapezoid, widest basally **2**
- Body (Fig. 25–26) subovate. Pronotum subrectangular, widest about middle **5**
- 2(1). Metallic luster present (aeneous). Eyes moderately convex. Posterolateral angles of pronotum subrectangular. Elytra oblong; sides slightly rounded; striae replaced by rows of coarse punctures; intervals unevenly surfaced. Fig. 21. [Body length 6.0–7.0 mm; row 3 of elytra with three setiferous punctures; North Island, South Island and Stewart Island] ***Amarotypus edwardsii* Bates**

- Metallic luster absent. Eyes slightly convex. Posterolateral angles of pronotum acute, projected laterally. Elytra ovate; sides strongly rounded; striae present; intervals evenly surfaced 3
- 3(2). Sides of pronotum and elytra widely testaceous, strongly contrasting with rufopiceous background. Antennae rufotestaceous, with segments 3–4 rufopiceous. Pronotum strongly convex; sides not sinuate posteriorly. Fig. 22. [Smaller, body length 4.6 mm; stria 3 of elytra with a single setiferous puncture; South Island (southern WD)]
 *Amarotypus simoninensis* Laroche and Larivière, new species
- Sides of pronotum and elytra more uniformly colored, not contrasting with background. Antennae differently colored. Pronotum moderately convex; sides moderately sinuate posteriorly 4
- 4(3). Dorsal body piceous black. Antennal segments 1–4 rufotestaceous, 5–11 piceous black. Elytra with isodiametric microsculpture; striae deep and coarsely punctate, stria 3 with three setiferous punctures. Fig. 23. [Body length 5.7 mm; South Island (FD)]
 *Amarotypus takaheensis* Laroche and Larivière, new species
- Dorsal body rufotestaceous. Antennae rufotestaceous. Elytra with moderately transverse microsculpture; striae shallow and finely punctate, stria 3 with two setiferous punctures. Fig. 24. [Body length 6.7 mm; South Island (western NN)]
 *Amarotypus glasgowensis* Laroche and Larivière, new species
- 5(1). Metallic luster present (aeneous). Antennal segment 1 rufotestaceous, segments 2–11 rufopiceous. Pronotum strongly convex; sides not sinuate posteriorly; posterolateral angles rectangular. Elytra ovate; striae replaced by rows of punctures, row 3 with three setiferous punctures. Fig. 25. [Small body, length 5.3–6.6 mm; South Island (southern WD, southwestern FD)]
 *Amarotypus fiordlandensis* Laroche and Larivière, new species
- Metallic luster absent. Antennae rufotestaceous. Pronotum moderately convex; sides slightly sinuate posteriorly; posterolateral angles obtuse. Elytra oblong; striae present, stria 3 with four setiferous punctures. Fig. 26. [Larger body, length 6.6–6.8; South Island (eastern central FD)]
 *Amarotypus murchisonorum* Laroche and Larivière, new species

Amarotypus edwardsii Bates, 1872

Fig. 11, 21, 40

Amarotypus edwardsii Bates, 1872: 51. Type locality: New Zealand (MNHN).

Description. Body length 6.0–7.0 mm; ovate. Head, pronotum, elytra, and abdomen rufopiceous; antennae, palpi, tibiae, and tarsi rufotestaceous; femora rufopiceous. Microsculpture strong, isodiametric (almost granulate) on head, isodiametric on pronotum and elytra. Iridescence absent. Shiny on head, pronotum, and elytra. Metallic luster present (aeneous). **Head.** Labrum moderately transverse. Eyes moderately convex. **Thorax.** Pronotum strongly convex, finely punctate basally, obsoletely wrinkled across base, trapezoid, widest basally; apex moderately emarginate; anterolateral angles poorly developed, angulate; anterior bead complete; sides strongly rounded anteriorly, moderately rounded posteriorly, not sinuate posteriorly; lateral beads narrow throughout; lateral depressions absent anteriorly, wide posteriorly; posterolateral angles subrectangular; laterobasal foveae with outer fovea oblong, narrow, shallow, and inner fovea oblong, moderately wide, moderately deep; posterior bead obsolete. **Legs.** Pro- and mesotarsomeres 1–4 of both sexes moderately dilated. **Elytra.** Oblong. Free along suture (hindwings partially developed, 65–75% of elytral length). Strongly convex. Shoulders slightly obtuse. Sides slightly rounded. Striae replaced by rows of coarse punctures; row 3 with three poorly developed, fine setiferous punctures. Scutellar striole very long (about two-thirds of elytral length). Intervals subdepressed (surface uneven). Umbilicate series with 15 setiferous punctures. Apices obtusely rounded. **Aedeagus.** Lateral view (Fig. 11): strongly arcuate, stout, strongly widened in apical half; base slightly convex dorsally; middle strongly convex dorsally, strongly concave ventrally, with dorsal membranous area wide and long in apical half; apex slightly convex dorsally, moderately concave ventrally, with extreme tip narrow, rounded, and curved downward. Dorsal view: asymmetrical (ostium of membranous area deflected to the left). Left paramere lanceolate in apical half (not lanceolate in other amarotypine taxa).

Material examined. 531 specimens (AMNZ, LUNZ, MONZ, NZAC).

Geographic distribution (Fig. 40). North Island: AK, BP, CL, GB, HB, ND, RI, TK, TO, WA, WI, WN, WO. South Island: BR, CO, DN, FD, MB, MC, NC, NN, OL, SD, SL, WD. Stewart Island.

Ecology. Lowland, montane, subalpine. Arboreal, silvicolous. Wet forests (beech, broadleaf, podocarp) and shrublands. Shaded ground. Nocturnal; active at night on trees (often on beech) and shrubs; hides during the day under the loose bark of dead trees, as well as in moss, liverworts, and lichens growing on trees and shrubs.

Biology. Seasonality: throughout the year. Teneral: September. Predacious (based on mouthpart morphology). Defense mechanism: either emits a strong smell or drops on the ground when disturbed. Occasionally infested with mites.

Dispersal power. Submacropterous (incapable of flight). Moderate runner. Regular climber (on trees and shrubs).

Collecting techniques. Lifting the loose bark of dead trees; beating trees and shrubs; examining mossy trunks at night; malaise trapping; yellow pan trapping; inspecting moss, liverworts, and lichens.

References. Larochelle and Larivière 2001: 40 (catalogue; biology, dispersal power, ecology, geographic distribution, references), 2007: 110 (list).

Remarks. This species was found in “New Zealand” by Mr. H. Edwards who collected three specimens which were described by Bates (1872). There is no ambiguity about the identity of this species, based on its original description and the redescription by Jeannel (1938) who saw the type material in the Muséum national d’Histoire naturelle (MNHN), Paris, France. In addition to diagnostic characters of the male genitalia, *Amarotypus edwardsii* has the following distinguishing features: metallic luster present (aeneous); eyes moderately convex; posterolateral angles of pronotum subrectangular; elytra oblong, sides slightly rounded, striae replaced by rows of coarse punctures, intervals unevenly surfaced. This species is distributed throughout New Zealand (North, South, and Stewart Islands).

Amarotypus simoninensis Larochelle and Larivière, new species

Fig. 22, 44

Amarotypus simoninensis Larochelle and Larivière, new species. Holotype: male (NZAC) labeled “[NEW ZEALAND] FD [=WD] Simonin Pass W. Olivine Ra [=Range] (hand-written) / 1067 m FD [=WD] 27 Jan 75 G.W. Ramsay (hand-written) / Litter (typed) in Nothofagus forest 75/38 (hand-written) / HOLOTYPE ♂ *Amarotypus simoninensis* Larochelle & Larivière, 2022 (red label; typed).”

Description. Body length 4.6 mm; ovate. Dorsal surface bicolored. Head, pronotum, elytra, and abdomen rufopiceous; sides of pronotum and elytra widely rufotestaceous; antennae rufotestaceous (segments 3–4 rufopiceous); palpi and femora rufotestaceous; tibiae and tarsi rufopiceous. Microsculpture strong and isodiametric (almost granulate) on head, obsolete and isodiametric on pronotum, obsolete and very transverse (with microlines) on elytra. Iridescence present on elytra. Shiny on head, pronotum, and elytra. Metallic luster absent. **Head.** Labrum moderately transverse. Eyes slightly convex. **Thorax.** Pronotum strongly convex, impunctate, obsoletely wrinkled across base, trapezoid, widest basally; apex moderately emarginate; anterolateral angles well developed, angulate; anterior bead complete; sides moderately rounded, not sinuate posteriorly; lateral beads narrow, slightly widened from apex to base; lateral depressions present, widened anteriorly and posteriorly; posterolateral angles acute, slightly projected laterally; laterobasal foveae with outer fovea oblong, narrow, shallow, and inner fovea oblong, moderately wide, moderately deep; posterior bead obsolete. **Legs.** Pro- and mesotarsomeres 1–4 of male moderately dilated. **Elytra.** Ovate. Fused along suture (hindwings vestigial). Strongly convex. Shoulders slightly obtuse. Sides strongly rounded. Striae shallow, finely punctate; stria 3 with a single well developed, coarse setiferous puncture. Scutellar striole moderately long (about a quarter of elytral length). Intervals slightly convex. Umbilicate series with 15 setiferous punctures. Apices obtusely rounded. **Aedeagus.** Not examined.

Material examined. 1 specimen (NZAC).

Geographic distribution (Fig. 44). South Island: WD–Westland National Park (Olivine Range, Simonin Pass).

Ecology. Subalpine. Wet forest (beech). Shaded ground. Nocturnal; hides during the day in leaf litter.

Biology. Seasonality: January. Predacious (based on mouthpart morphology).

Dispersal power. Subapterous (incapable of flight).

Collecting technique. Sifting leaf litter.

Remarks. This species is named after the type locality Simonin Pass (WD) and the Latin suffix *-ensis*, denoting a place, locality, or country. Due to the paucity of material, no male was dissected in this study. However, there is no ambiguity regarding the identity of this taxon. *Amarotypus simoninensis* has the following distinguishing features: dorsal surface bicolored (sides of head, pronotum, and elytra widely testaceous, strongly contrasting with rufopiceous background); antennae rufotestaceous, with segments 3–4 rufopiceous; pronotum strongly convex, sides not sinuate posteriorly; elytral stria 3 with a single well developed, coarse setiferous puncture. This species is known only from the type locality in the southwest of the South Island.

***Amarotypus takaheensis* Laroche and Larivière, new species**

Fig. 12, 23, 45

Amarotypus takaheensis Laroche and Larivière, new species. Holotype: male (NZAC) labeled “NEW ZEALAND FD Takahe V [=Valley] 7 Nov 2012–12 March 2013, 1220m, R. Leschen, A. Schnurpfeil (typed) / *Chionochloa teretifolia* -45.2735475, 167.62.7021[=167.627021E]. Pit trap # (typed) / T1-15ug (hand-written) / HOLOTYPE ♂ *Amarotypus takaheensis* Laroche & Larivière, 2022 (red label; typed).” Paratype: one female (AMNZ) from Hump Mountain [=The Hump, FD], bearing a blue paratype label.

Description. Body length 5.7 mm; ovate. Head, pronotum, and elytra piceous black; abdomen rufopiceous; antennal segments 1–4 rufotestaceous, 5–11 piceous black; palpi and legs rufotestaceous. Microsculpture strong and isodiametric (almost granulate) on head, weak and isodiametric on pronotum, obsolete and isodiametric on elytra. Iridescence absent. Shiny on head, pronotum, and elytra. Metallic luster absent. **Head.** Labrum moderately transverse. Eyes slightly convex. **Thorax.** Pronotum moderately convex, obsoletely punctate and unwrinkled across base, trapezoid, widest basally; apex moderately emarginate; anterolateral angles poorly developed, angulate; anterior bead complete; sides moderately rounded, moderately sinuate posteriorly; lateral beads narrow, slightly widened from apex to base; lateral depressions absent anteriorly, wide posteriorly; posterolateral angles acute, moderately projected laterally; laterobasal foveae with outer fovea oblong, narrow, shallow, and inner fovea oblong, moderately wide, moderately deep; posterior bead obsolete. **Legs.** Pro- and mesotarsomeres 1–4 of both sexes moderately dilated. **Elytra.** Ovate. Fused along suture (hindwings vestigial). Strongly convex. Shoulders slightly obtuse. Sides strongly rounded. Striae deep, coarsely punctate; stria 3 with three poorly developed, fine setiferous punctures. Scutellar striole very long (about two-thirds of elytral length). Intervals slightly convex. Umbilicate series with 15 setiferous punctures. Apices obtusely rounded. **Aedeagus.** Lateral view (Fig. 12): strongly arcuate, slender, moderately widened in apical half; base slightly convex dorsally; middle strongly convex dorsally, strongly concave ventrally, without dorsal membranous area; apex moderately concave dorsally and ventrally, with extreme tip narrow, rounded, hooked dorsally. Dorsal view: asymmetrical (ostium of membranous area deflected to the right).

Material examined. 2 specimens (AMNZ, NZAC).

Geographic distribution (Fig. 45). South Island: FD–Fiordland National Park (Murchison Mountains, Takahe Valley; The Hump).

Ecology. Alpine. Epigeal. Tussock grassland. Open ground. Probably nocturnal.

Biology. Seasonality: January, March. Predacious (based on mouthpart morphology).

Dispersal power. Subapterous (incapable of flight).

Collecting technique. Pitfall trapping.

Remarks. This species is named after the type locality Takahe Valley (FD) and the Latin suffix *-ensis*, denoting a place, locality, or country. *Amarotypus takaheensis* is morphologically close to *A. glasgowensis*. In addition to diagnostic characters of the male genitalia, *Amarotypus takaheensis* has the following distinguishing features: dorsal body piceous black; antennal segments 1–4 rufotestaceous, 5–11 piceous black; elytra with isodiametric microsculpture, striae deep and coarsely punctate, stria 3 with three setiferous punctures. The two species are allopatric: *A. takaheensis* occurs in the southwestern South Island (FD), while *A. glasgowensis* is known only from the northwestern South Island (NN).

***Amarotypus glasgowensis* Laroche and Larivière, new species**

Fig. 24, 42

Amarotypus glasgowensis Laroche and Larivière, new species. Holotype: male (AMNZ) labeled “[NEW ZEALAND NN] Mt. [=Mount] Glasgow Westland 4000' 23.2.38 (hand-written) / C.E. Clarke Collection (typed) / AMNZ 31973 Auckland Museum New Zealand (green label; typed) / HOLOTYPE ♂ *Amarotypus glasgowensis* Laroche & Larivière, 2022 (red label; typed).”

Description. Body length 6.7 mm; ovate. Head, pronotum, and elytra rufotestaceous; abdomen rufopiceous; antennae, palpi, and legs rufotestaceous. Microsculpture weak and isodiametric (almost granulate) on head, weak and isodiametric on pronotum, obsolete and moderately transverse on elytra. Iridescence present on elytra. Shiny on head, pronotum, and elytra. Metallic luster absent. **Head.** Labrum moderately transverse. Eyes slightly convex. **Thorax.** Pronotum moderately convex, obsoletely punctate and wrinkled across base, trapezoid, widest basally; apex moderately emarginate; anterolateral angles poorly developed, angulate; anterior bead complete; sides moderately rounded, moderately sinuate posteriorly; lateral beads narrow, slightly widened from apex to base; lateral depressions absent anteriorly, wide posteriorly; posterolateral angles acute, moderately projected laterally; laterobasal foveae with outer fovea oblong, narrow, shallow, and inner fovea oblong, moderately wide, moderately deep; posterior bead obsolete. **Legs.** Pro- and mesotarsomeres 1–4 of male moderately dilated. **Elytra.** Ovate. Fused along suture (hindwings vestigial). Strongly convex. Shoulders slightly obtuse. Sides strongly rounded. Striae shallow, finely punctate; stria 3 with two poorly developed, fine setiferous punctures. Scutellar striae very long (about two-thirds of elytral length). Intervals subdepressed. Umbilicate series with 15 setiferous punctures. Apices obtusely rounded. **Aedeagus.** Not examined.

Material examined. 1 specimen (AMNZ).

Geographic distribution (Fig. 42). South Island: NN–Mount Glasgow.

Ecology. Alpine. Epigeal. Open ground. Probably nocturnal.

Biology. Seasonality: February. Predacious (based on mouthpart morphology).

Dispersal power. Subapterous (incapable of flight).

Collecting technique. Unknown.

Remarks. This species is named after the type locality Mount Glasgow (NN) and the Latin suffix *-ensis*, denoting a place, locality, or country. Due to the paucity of material, no male was dissected in this study. However, there is no ambiguity regarding the identity of this taxon. *Amarotypus glasgowensis* is morphologically close to *A. takaheensis* from which it can be distinguished as follows: dorsal body rufotestaceous; antennae rufotestaceous; elytra with moderately transverse microsculpture, striae shallow and finely punctate, stria 3 with two setiferous punctures. The two species are allopatric: *A. glasgowensis* is known only from the northwestern South Island (NN), while *A. takaheensis* occurs in the southwestern South Island (FD).

***Amarotypus fiordlandensis* Laroche and Larivière, new species**

Fig. 13, 25, 41

Amarotypus fiordlandensis Laroche and Larivière, new species. Holotype: male (NZAC) labeled “NEW ZEALAND FD Bauza I [=Island] Mar 1984 C.F. Butcher (typed) beaten *Nothofagus menziesii* (hand-written) / HOLOTYPE ♂ *Amarotypus fiordlandensis* Laroche & Larivière, 2022 (red label; typed).” Paratypes: two males and two females (NZAC) from the same locality as the holotype, bearing blue paratype labels.

Description. Body length 5.3–6.6 mm; subovate. Head, pronotum, elytra, and abdomen rufopiceous; antennal segment 1 rufotestaceous, segments 2–11 rufopiceous; palpi rufotestaceous; legs rufopiceous. Microsculpture strong, isodiametric (almost granulate) on head, isodiametric on pronotum, and moderately transverse (brick-like) on elytra. Iridescence present on elytra. Shiny on head, pronotum, and elytra. Metallic luster present (aeneous). **Head.** Labrum moderately transverse. Eyes moderately convex. **Thorax.** Pronotum strongly convex, finely punctate basally, strongly wrinkled on disc and across base, subrectangular, widest about middle; apex moderately emarginate; anterolateral angles poorly developed, rectangular; anterior bead complete; sides strongly rounded, not sinuate posteriorly; lateral beads narrow throughout; lateral depressions absent anteriorly, wide posteriorly; posterolateral angles rectangular; laterobasal foveae with outer fovea oblong, narrow, and shallow,

and inner fovea oblong, moderately wide, moderately deep; posterior bead incomplete, obsolete medially. **Legs.** Pro- and mesotarsomeres 1–4 of both sexes moderately dilated. **Elytra.** Ovate. Fused along suture (hindwings vestigial). Strongly convex. Shoulders strongly obtuse. Sides slightly rounded. Striae replaced by shallow rows of fine punctures; row 3 with three poorly developed, fine setiferous punctures. Scutellar striole very long (about two-thirds of elytral length). Intervals slightly convex (surface uneven). Umbilicate series with 13 to 15 setiferous punctures. Apices obtusely rounded. **Aedeagus.** Lateral view (Fig. 13): slightly arcuate, slender, strongly widened apically; base moderately convex dorsally; middle slightly convex dorsally, slightly concave ventrally, with dorsal membranous area wide and short in apical half; apex ax-shaped, strongly convex dorsally, strongly concave ventrally, with extreme tip very wide, rounded, hooked ventrally. Dorsal view: asymmetrical (ostium of membranous area deflected to the left).

Material examined. 30 specimens (LUNZ, MONZ, NZAC).

Geographic distribution (Fig. 41). South Island: FD–Fiordland National Park (Bauza Island; Breaksea Sound; Doubtful Sound; Secretary Island; Wilmot Pass). WD–Westland National Park (Castle Rocks Valley; Olivine Range, Simonin Pass).

Ecology. Lowland, montane, subalpine. Arboreal, silvicolous. Wet forests (beech) and scrublands. Shaded ground. Nocturnal; active at night on mossy tree trunks; hides during the day on trees (beech) and shrubs (*Coprosma*, *Dracophyllum*, *Schefflera*).

Biology. Seasonality: November, January–March. Teneral: January. Predacious (based on mouthpart morphology).

Dispersal power. Subapterous (incapable of flight). Moderate runner. Regular climber (on trees and shrubs).

Collecting techniques. Beating trees and shrubs; examining mossy tree trunks at night.

Remarks. This species is named after Fiordland (FD), the geographic area where the type locality Bauza Island is situated and the Latin suffix *-ensis*, denoting a place, locality, or country. *Amarotypus fiordlandensis* is morphologically close to *A. murchisonorum*. In addition to morphological characters of the male genitalia, *A. fiordlandensis* has the following distinguishing features: body smaller, length 5.3–6.6 mm; metallic luster present (aeneous); antennal segment 1 rufotestaceous, segments 2–11 rufopiceous; pronotum strongly convex, sides not sinuate posteriorly, posterolateral angles rectangular; elytra ovate, striae replaced by rows of punctures, row 3 with three setiferous punctures. *Amarotypus fiordlandensis* is found in southwestern areas of the South Island (FD, WD).

Amarotypus murchisonorum Laroche and Larivière, new species

Fig. 14, 26, 43

Amarotypus murchisonorum Laroche and Larivière, new species. Holotype: male (NZAC) labeled “NEW ZEALAND FD Murchison Mtns [=Mountains] Takaha Vly [=Valley] 2013“/”14 (typed) / Pitfall trap R Leschen and others (typed) / T8 + So15ug (hand-written) / HOLOTYPE ♂ *Amarotypus murchisonorum* Laroche & Larivière, 2022 (red label; typed).” Paratypes: three females (NZAC) from the same locality as the holotype, bearing blue paratype labels.

Description. Body length 6.6–6.8 mm; subovate. Head, pronotum, elytra, and abdomen rufopiceous; antennae, palpi, and tarsi rufotestaceous; femora and tibiae rufopiceous. Microsculpture strong, isodiametric (almost granulate) on head, isodiametric on pronotum, and moderately transverse (brick-like) on elytra. Iridescence present on elytra. Shiny on head, pronotum, and elytra. Metallic luster absent. **Head.** Labrum moderately transverse. Eyes moderately convex. **Thorax.** Pronotum moderately convex, finely punctate on disc, strongly wrinkled on disc and across base, subrectangular, widest about middle; apex moderately emarginate; anterolateral angles well developed, angulate; anterior bead complete; sides strongly rounded, slightly sinuate posteriorly; lateral beads narrow, slightly widened from apex to base; lateral depressions absent anteriorly, wide posteriorly; posterolateral angles obtuse; laterobasal foveae with outer fovea oblong, narrow, shallow, and inner fovea oblong, moderately wide, very deep; posterior bead obsolete. **Legs.** Pro- and mesotarsomeres 1–4 of both sexes strongly dilated. **Elytra.** Oblong. Fused along suture (hindwings vestigial). Moderately convex. Shoulders slightly obtuse. Sides moderately rounded. Striae shallow, finely punctate; stria 3 with four poorly developed, fine setiferous punctures. Scutellar striole very long (about two-thirds of elytral length). Intervals slightly convex. Umbilicate series with 15 setiferous punctures. Apices obtusely rounded. **Aedeagus.** Lateral view (Fig. 14): moderately arcuate, slender,

strongly widened apically; base slightly convex dorsally; middle moderately convex dorsally, moderately concave ventrally, without dorsal membranous area; apex hammer-shaped, moderately biconcave dorsally, moderately concave ventrally, with extreme tip very wide, square, curved downward. Dorsal view: asymmetrical (ostium of membranous area deflected to the right).

Material examined. 135 specimens (NZAC).

Geographic distribution (Fig. 43). South Island: FD–Fiordland National Park (Murchison Mountains, Takahe Valley).

Ecology. Subalpine. Arboreal. Wet forests (beech). Shaded ground. Probably nocturnal.

Biology. Seasonality: November–March. Predacious (based on mouthpart morphology).

Dispersal power. Subapterous (incapable of flight). Moderate runner.

Collecting technique. Pitfall trapping.

Remarks. This species is named after the Murchison Mountains (FD) where the type locality Takahe Valley is situated and the Latin suffix *-orum*, meaning ‘of’ (of the Murchison Mountains). *Amarotypus murchisonorum* is morphologically close to *A. fiordlandensis*. In addition to diagnostic characters of the male genitalia, *Amarotypus murchisonorum* has the following distinguishing features: body larger, length 6.6–6.8; metallic luster absent; antennae rufotestaceous; pronotum moderately convex, sides slightly sinuate posteriorly, posterolateral angles obtuse; elytra oblong, striae shallow and finely punctate, stria 3 with four setiferous punctures. *Amarotypus murchisonorum* is known only from the type locality.

Genus *Amaroxenus* Laroche and Larivière, new genus

Fig. 9, 15–17, 27–30, 46–49

Type species. *Amaroxenus kahurangiensis* new species, by present designation.

Description. Body length 5.3–6.8 mm; slender; pronotum cordate or subcordate, elytra subovate; forebody narrower than elytra. Color dark, rufopiceous (brown in *A. glacialis*). Metallic luster absent. Dorsal surface mostly glabrous. **Head.** Mandibles moderately long and curved. Eyes slightly convex (subdepressed in *A. glacialis*); setiferous puncture inserted postmedially on inner side of each eye, distant from it. Frontal furrows very deep, convergent posteriorly (Fig. 7). Submentum with six setae. **Thorax.** Pronotum moderately wide, cordate or subcordate. Laterobasal foveae single. Pronotal base narrower than elytral base. **Legs.** Very long. Pro- and mesotarsomeres 1–4 of both sexes moderately dilated (strongly dilated in *A. glacialis*). **Elytra.** Subovate. Fused along suture (hindwings vestigial). Shoulders poorly developed, rounded. Striae present, consisting of impressed lines; stria 3 with two or three setiferous punctures. Scutellar striole very long (about of two-thirds of elytral length). Intervals slightly convex (depressed in *A. glacialis*). Umbilicate series with 12 to 16 setiferous punctures. **Aedeagus.** Lateral view (Fig. 15–17): strongly arcuate, stout, multistriate in apical half (not multistriate in *A. glacialis*). Dorsal view: asymmetrical (ostium of membranous area deflected to the right). Parameres: right paramere with a ventral fringe of short setae (long setae in *A. huttensis*). **Gonocoxites.** Right and left pair close to each other; gonocoxite 1 slender, subparallel, without rows of spines; gonocoxite 2 with a single subapical seta (Fig. 9).

Remarks. The generic name is masculine and derived from *Amarotypus* (type genus of the tribe Amarotypini) and the Greek noun *xenos* (stranger), alluding to differences in body shape between *Amaroxenus* and *Amarotypus*. The morphological characters unifying species of *Amaroxenus* are: body slender; pronotum cordate or subcordate; elytra subovate; legs very long; setiferous puncture of head inserted postmedially on inner side of each eye; frontal furrows very deep, convergent posteriorly; aedeagus (in lateral view) stout, multistriate in apical half (not multistriate in *A. glacialis*); right and left pair of gonocoxites close to each other, gonocoxite 1 subparallel. The species of this genus occur throughout the South Island, in subalpine or alpine tussock grasslands and fellfields.

Key to species of *Amaroxenus*

1. Elytral stria 3 with poorly developed, fine setiferous punctures. Pronotum subcordate; sides moderately rounded; laterobasal foveae not separated from lateral depressions by a carina. Fig. 27–28 2

- Elytral stria 3 with well developed, coarse setiferous punctures. Pronotum cordate; sides strongly rounded; laterobasal foveae separated from lateral depressions by a carina. Fig. 29–30 3
- 2(1). Dorsal body dull brown; microsculpture strong. Eyes subdepressed. Pro- and mesotarsomeres 1–4 of both sexes strongly dilated. Pronotum moderately convex; posterolateral angles rectangular; laterobasal foveae very wide, very deep, reaching lateral depressions. Elytra moderately convex; striae deep, coarsely punctate; intervals depressed. Fig. 27. [Body length 6.5–6.8 mm; western South Island (WD)] ***Amaroxenus glacialis* Laroche and Larivière, new species**
- Dorsal body shiny rufopiceous; microsculpture weak. Eyes slightly convex. Pro- and mesotarsomeres 1–4 of females moderately dilated (males unknown). Pronotum strongly convex; posterolateral angles obtuse; laterobasal foveae moderately wide, shallow, separated from lateral depressions by a pronounced convexity. Elytra strongly convex; striae shallow, finely punctate; intervals slightly convex. Fig. 28. [Body length 6.5–6.6 mm; northeastern South Island (MB)] ***Amaroxenus arnaudensis* Laroche and Larivière, new species**
- 3(1). Antennal segments 1–2 rufotestaceous, 3–11 rufopiceous. Pronotum strongly convex; sides not sinuate posteriorly; posterolateral angles rectangular; laterobasal foveae shallow. Elytra dull, strongly convex; striae shallow, finely punctate. Fig. 29. [Body length 6.2–6.5 mm; southeastern South Island] ***Amaroxenus huttensis* Laroche and Larivière, new species**
- Antennae rufopiceous. Pronotum moderately convex; sides moderately sinuate posteriorly; posterolateral angles acute, slightly projected laterally; laterobasal foveae very deep. Elytra shiny, moderately convex; striae deep, coarsely punctate. Fig. 30. [Body length 5.3–6.6 mm; northwestern South Island (NN)] ***Amaroxenus kahurangiensis* Laroche and Larivière, new species**

***Amaroxenus glacialis* Laroche and Larivière, new species**

Fig. 15, 27, 47

Amaroxenus glacialis Laroche and Larivière, new species. Holotype: male (NZAC) labeled “NEW ZEALAND WD Chancellor area Fox Glacier 30-Jan-05 (typed) / Under rock at c1400m (typed) / Donated by J. Nunn (typed) / HOLOTYPE ♂ *Amaroxenus glacialis* Laroche & Larivière, 2022 (red label; typed).” Paratypes: one female (NZAC) from the same locality as the holotype and one male (AMNZ) from Mount Moltke, bearing blue paratype labels.

Description. Body length 6.5–6.8 mm. Head, pronotum, elytra, and abdomen brown; antennal segments 1–4 rufotestaceous, 5–11 black; palpi rufotestaceous; femora and tibiae rufopiceous; tarsi rufotestaceous. Microsculpture strong (weak in other species), isodiametric on head (almost granulate), pronotum, and elytra. Iridescence absent. Dull on head, pronotum, and elytra. **Head.** Labrum strongly transverse. Eyes subdepressed (slightly convex in other species). **Thorax.** Pronotum moderately convex, obsolete punctate in laterobasal foveae, obsolete wrinkled on disc and across base, subcordate, moderately wide (more so than in other species), widest before middle; apex subtruncate; anterolateral angles poorly developed, obtuse; anterior bead incomplete, obsolete laterally (near posterolateral angles); sides moderately rounded, not sinuate posteriorly; lateral beads narrow throughout; lateral depressions absent anteriorly, narrow posteriorly; posterolateral angles rectangular; laterobasal foveae rounded, very wide, very deep, reaching lateral depressions; posterior bead incomplete, obsolete laterally. **Legs.** Pro- and mesotarsomeres 1–4 of both sexes strongly dilated. **Elytra.** Moderately convex. Sides strongly rounded. Striae deep, coarsely punctate; stria 3 with two poorly developed, fine setiferous punctures. Intervals depressed. Umbilicate series with 12 to 14 setiferous punctures. Apices angulate. **Aedeagus.** Lateral view (Fig. 15): strongly arcuate, stout, strongly widened and not multistriate in apical half; base slightly convex dorsally; middle strongly convex dorsally, strongly concave ventrally, with dorsal membranous area narrow and long in apical half; apex slightly concave dorsally and ventrally, with extreme tip very wide, rounded. Dorsal view: asymmetrical (ostium of membranous area deflected to the right).

Material examined. 3 specimens (AMNZ, NZAC).

Geographic distribution (Fig. 47). South Island: WD–Westland National Park (Fox Glacier, Chancellor area; Mount Moltke).

Ecology. Subalpine. Epigeal. Moraine and tussock area. Open ground. Nocturnal; hides during the day under stones.

Biology. Seasonality: January. Predacious (based on mouthpart morphology).

Dispersal power. Subapterous (incapable of flight).

Collecting technique. Turning stones.

Remarks. This species is named after the type locality Fox Glacier (WD). *Amaroxenus glacialis* is morphologically close to *A. arnaudensis* and can be distinguished from it by the following features: dorsal body dull brown; microsculpture strong; eyes subdepressed; pro- and mesotarsomeres 1–4 of both sexes strongly dilated; pronotum moderately convex, with posterolateral angles rectangular and laterobasal foveae very wide, very deep, reaching lateral depressions; elytra moderately convex, striae deep and coarsely punctate, intervals depressed. The two species are allopatric: *A. glacialis* occurs in the Westland region (WD) of the South Island, while *A. arnaudensis* is known only from the Marlborough region (MB) in the northeast of the South Island.

Amaroxenus arnaudensis Laroche and Larivière, new species

Fig. 28, 46

Amaroxenus arnaudensis Laroche and Larivière, new species. Holotype: female (NZAC) labeled “NEW ZEALAND MB Rainbow ski field, St Arnaud Ra [=Range] 26 Feb 2010 T.R. Buckley, R. Leschen, L. Dunning (typed) / TB334 -41.86 172.85°E 1675m under rocks (typed) / Sp. 30 (hand-written) / BOLD NZGBS047-18 DNA Sequenced (typed; blue label) / NZ Arthropod Collection Private Bag 92170 Auckland New Zealand NZAC04165581 (barcode label; typed) / HOLOTYPE ♀ *Amaroxenus arnaudensis* Laroche & Larivière, 2022 (red label; typed).” Paratype: one female (NZAC) from the same locality as the holotype, bearing a blue paratype label.

Description. Body length 6.5–6.6 mm. Head, pronotum, and elytra rufopiceous; abdomen rufotestaceous; antennal segments 1–4 rufotestaceous, 5–11 rufopiceous; palpi, tibiae, and tarsi testaceous; femora rufotestaceous. Microsculpture weak, isodiametric on head (almost granulate), moderately transverse on pronotum and elytra. Iridescence present on pronotum and elytra. Shiny on head, pronotum, and elytra. **Head.** Labrum strongly transverse. Eyes slightly convex. **Thorax.** Pronotum strongly convex, obsolete punctate across base, obsolete wrinkled medially and across base, subcordate, widest before middle; apex subtruncate; anterolateral angles poorly developed, obtuse; anterior bead incomplete, obsolete medially; sides moderately rounded, slightly sinuate posteriorly; lateral beads narrow throughout; lateral depressions absent; posterolateral angles obtuse; laterobasal foveae rounded, moderately wide, shallow, separated from lateral depressions by a pronounced convexity; posterior bead incomplete, obsolete laterally. **Legs.** Pro- and mesotarsomeres 1–4 of females moderately dilated. **Elytra.** Strongly convex. Sides strongly rounded. Striae shallow, finely punctate; stria 3 with two or three poorly developed, fine setiferous punctures. Intervals slightly convex. Umbilicate series with 14 or 15 setiferous punctures. Apices angulate. **Aedeagus.** Male unknown.

Material examined. 2 specimens (NZAC).

Geographic distribution (Fig. 46). South Island: MB–Saint Arnaud Range (Rainbow Skifield).

Ecology. Alpine. Epigeal. Fellfields. Open ground. Nocturnal; hides during the day under stones.

Biology. Seasonality: February. Teneral: February. Predacious (based on mouthpart morphology).

Dispersal power. Subapterous (incapable of flight).

Collecting technique. Turning stones.

Remarks. This species is named after the Saint Arnaud Range (MB) where the type locality is situated and the Latin suffix *-ensis*, denoting a place, locality, or country. The species is known only from two females. However, there is no ambiguity regarding the identity of this taxon. *Amaroxenus arnaudensis* is morphologically close to *A. glacialis* from which it can be distinguished as follows: dorsal body shiny rufopiceous; microsculpture weak; eyes slightly convex; pronotum strongly convex, with posterolateral angles obtuse, laterobasal foveae moderately wide and shallow, separated from lateral depressions by a pronounced convexity; elytra strongly convex, striae shallow and finely punctate, intervals slightly convex. The two species are allopatric: *A. arnaudensis* is known only from the Marlborough region (MB) in the northeast of the South Island, while *A. glacialis* occurs in the Westland region (WD) of the South Island.

***Amaroxenus huttensis* Laroche and Larivière, new species**

Fig. 16, 29, 48

Amaroxenus huttensis Laroche and Larivière, new species. Holotype: male (NZAC) labeled “NEW ZEALAND MC Mt [=Mount] Hutt Skifield Basin 24-Dec-99 (typed) / Under rock on silty substrate (typed) / Donated by J. Nunn (typed) / HOLOTYPE ♂ *Amaroxenus huttensis* Laroche & Larivière, 2022 (red label; typed).” Paratypes: one male and two females (NZAC) from the same locality as the holotype, bearing blue paratype labels.

Description. Body length 6.2–6.5 mm. Head, pronotum, and elytra rufopiceous; abdomen rufotestaceous; antennal segments 1–2 rufotestaceous, 3–11 rufopiceous; palpi rufotestaceous; femora rufopiceous; tibiae and tarsi rufotestaceous. Microsculpture weak, isodiametric (almost granulate) on head, isodiametric on pronotum, and moderately transverse on elytra. Iridescence present on elytra. Shiny on head and pronotum, dull on elytra. **Head.** Labrum strongly transverse. Eyes slightly convex. **Thorax.** Pronotum strongly convex, obsoletely punctate basally, obsoletely wrinkled medially and across base, cordate, widest before middle; apex subtruncate; antero-lateral angles poorly developed, obtuse; anterior bead incomplete, obsolete medially; sides strongly rounded, not sinuate posteriorly; lateral beads narrow throughout; lateral depressions absent; posterolateral angles rectangular; laterobasal foveae rounded, moderately wide, shallow, separated from lateral depressions by a carina; posterior bead incomplete, obsolete laterally. **Legs.** Pro- and mesotarsomeres 1–4 of both sexes moderately dilated. **Elytra.** Strongly convex. Sides strongly rounded. Striae shallow, finely punctate; stria 3 with two or three well developed, coarse setiferous punctures. Intervals slightly convex. Umbilicate series with 13 to 16 setiferous punctures. Apices angulate. **Aedeagus.** Lateral view (Fig. 16): strongly arcuate, stout, strongly widened and multistriate in apical half; base almost straight dorsally; middle strongly convex dorsally, strongly concave ventrally, with dorsal membranous area moderately wide and short in apical half; apex almost straight dorsally, moderately concave ventrally, with extreme tip very wide, rounded. Dorsal view: asymmetrical (ostium of membranous area deflected to the right).

Material examined. 15 specimens (NZAC).

Geographic distribution (Fig. 48). South Island: CO–Hawkdun Range. Saint Bathans Range. MC–Mount Hutt Skifield. MK–Ohaui Skifield.

Ecology. Alpine. Epigeal. Fellfields. Open ground. Nocturnal; hides during the day under stones.

Biology. Seasonality: December–March. Predacious (based on mouthpart morphology).

Dispersal power. Subapterous (incapable of flight).

Collecting technique. Turning stones.

Remarks. This species is named after the type locality Mount Hutt (MC) and the Latin suffix *-ensis* denoting a place, locality, or country. *Amaroxenus huttensis* is morphologically close to *A. kahurangiensis*. In addition to diagnostic characters of the male genitalia, *A. huttensis* has the following distinguishing features: antennal segments 1–2 rufotestaceous, 3–11 rufopiceous; pronotum strongly convex, not sinuate posteriorly, with posterolateral angles rectangular, laterobasal foveae shallow; elytra dull, strongly convex, with shallow and finely punctate striae. The two species are allopatric: *A. huttensis* occurs in southeastern areas of the South Island (CO, MC, MK), while *A. kahurangiensis* is known only from the northwest of the South Island (NN).

***Amaroxenus kahurangiensis* Laroche and Larivière, new species**

Fig. 17, 30, 49

Amaroxenus kahurangiensis Laroche and Larivière, new species. Holotype: male (NZAC) labeled “NEW ZEALAND, FD [=NN] Kahurangi NP [=National Park], Lookout Ra [=Range], Head of Dart R. [=River] 1500m, 10–16 Jan 2008. I. Millar (typed) / Pit traps Granite sand flats 41.33S, 172.36E (typed) / HOLOTYPE ♂ *Amaroxenus kahurangiensis* Laroche & Larivière, 2022 (red label; typed).” Paratypes: one male and two females (NZAC) from the same locality as the holotype, bearing blue paratype labels.

Description. Body length 5.3–6.6 mm. Head, pronotum, and elytra piceous black; abdomen dark brown; antennae, palpi, and legs rufopiceous. Microsculpture weak and isodiametric (almost granulate) on head, obsolete and isodiametric on pronotum, weak and moderately transverse on elytra. Iridescence present on elytra. Shiny on head, pronotum, and elytra. **Head.** Labrum strongly transverse. Eyes slightly convex. **Thorax.** Pronotum

moderately convex, impunctate, obsolete wrinkled medially and across base, cordate, widest before middle; apex strongly emarginate; anterolateral angles poorly developed, obtuse; anterior bead complete; sides strongly rounded, moderately sinuate posteriorly; lateral beads narrow throughout; lateral depressions absent; posterolateral angles acute, slightly projected laterally; laterobasal foveae rounded, moderately wide, very deep, separated from lateral depressions by a carina; posterior bead complete. **Legs.** Pro- and mesotarsomeres 1–4 of both sexes moderately dilated. **Elytra.** Moderately convex. Sides strongly rounded. Striae deep, coarsely punctate; stria 3 with two or three well developed, coarse setiferous punctures. Intervals slightly convex. Umbilicate series with 12 or 13 setiferous punctures. Apices angulate. **Aedeagus.** Lateral view (Fig. 17): strongly arcuate, stout, strongly widened and multistriate in apical half; base slightly convex dorsally; middle strongly convex dorsally, moderately concave ventrally, without dorsal membranous area; apex moderately concave dorsally and ventrally, with extreme tip very wide, rounded. Dorsal view: asymmetrical (ostium of membranous area deflected to the right).

Material examined. 22 specimens (NZAC).

Geographic distribution (Fig. 49). South Island: NN–Kahurangi National Park (Lookout Range, Head of Dart River).

Ecology. Alpine. Epigeal. Granite sand flats. Open ground. Probably nocturnal.

Biology. Seasonality: January. Predacious (based on mouthpart morphology).

Dispersal power. Subapterous (incapable of flight).

Collecting technique. Pitfall trapping.

Remarks. This species is named after the Kahurangi National Park (NN), the geographic area of the type locality and the Latin suffix *-ensis*, denoting a place, locality, or country. *Amaroxenus kahurangiensis* is morphologically close to *A. huttensis*. In addition to diagnostic characters of the male genitalia, *A. kahurangiensis* has the following distinguishing features: antennae rufopiceous; pronotum moderately convex, sides moderately sinuate posteriorly, posterolateral angles acute and slightly projected laterally, laterobasal foveae very deep; elytra shiny, moderately convex, with deep and coarsely punctate striae. The two species are allopatric: *A. kahurangiensis* is known only from the northwest of the South Island (NN), while *A. huttensis* occurs in southeastern areas of the South Island (CO, MC, MK). *Amaroxenus kahurangiensis* was mentioned in Hoare et al. (2016) as *Amarotypini* gen. nov., sp. nov., with a photo of the type locality and a discussion of the granite sand plains ecosystem.

Genus *Amarophilus* Laroche and Larivière, new genus

Fig. 10, 18–20, 31–34, 36–39

Type species. *Amarophilus otagoensis* new species, by present designation.

Description. Body length 5.8–7.2 mm; stout, ovate or subovate; forebody as wide as elytra. Color dark, rufopiceous or piceous black. Metallic luster absent. Dorsal surface mostly glabrous. **Head.** Mandibles short, strongly curved. Eyes subdepressed or slightly convex; setiferous puncture inserted medially or postmedially on inner side of each eye, distant from it. Frontal furrows moderately deep, subparallel posteriorly (very deep, convergent posteriorly in *A. wanakensis*) (Fig. 6–7). Submentum with six setae. **Thorax.** Pronotum very wide, rounded or trapezoid. Laterobasal foveae single. Pronotal base as wide as or narrower than elytral base. **Legs.** Moderately long. Pro- and mesotarsomeres 1–4 of both sexes moderately or strongly dilated. **Elytra.** Ovate. Fused along suture (hindwings vestigial). Shoulders poorly developed and rounded or well developed and obtuse. Striae present, consisting of impressed lines; stria 3 without setiferous punctures (two setiferous punctures in *A. lomondensis*). Scutellar striole very long (about two-thirds of elytral length). Intervals depressed or slightly convex. Umbilicate series with 12 to 15 setiferous punctures. **Aedeagus.** Lateral view (Fig. 18–20): strongly arcuate, slender, not multistriate in apical half. Dorsal view: asymmetrical (ostium of membranous area deflected to the right). Parameres: right paramere with a ventral fringe of short setae. **Gonocoxites.** Right and left pair distant from each other; gonocoxite 1 slender, subovate, without rows of spines; gonocoxite 2 with a single subapical seta (Fig. 10).

Remarks. The generic name is masculine and derived from *Amarotypus* (type genus of the tribe *Amarotypini*) and the Greek noun *philos* (friend), alluding to similarities in body shape between *Amarophilus* and *Amarotypus*. The morphological characters unifying species of *Amarophilus* are: body stout; pronotum rounded or trapezoid;

elytra ovate; legs moderately long; frontal furrows moderately deep, subparallel posteriorly (very deep, convergent posteriorly in *A. wanakensis*); aedeagus (in lateral view) slender, not multistriate in apical half; right and left pair of gonocoxites distant from each other, gonocoxite 1 subovate. The species of this genus occur in southern areas of the South Island (CO, OL), in alpine fellfields and tussock grasslands.

Key to species of *Amarophilus*

1. Eyes subdepressed. Setiferous puncture of head inserted medially (Fig. 6) on inner side of each eye. Laterobasal foveae of pronotum moderately deep, not separated from lateral depressions by a pronounced convexity 2
- Eyes slightly convex. Setiferous puncture of head inserted postmedially (Fig. 7) on inner side of each eye. Laterobasal foveae of pronotum very deep, separated from lateral depressions by a pronounced convexity 3
- 2(1). Body subovate, piceous black. Antennae bicolored, segments 1–4 rufotestaceous, 5–11 rufopiceous. Pronotum rounded, widest before middle; lateral beads narrow throughout; posterolateral angles rounded. Sides of elytra slightly rounded. Fig. 31. [Body length 5.8 mm; South Island (CO)] *Amarophilus rotundicollis* Laroche and Larivière, new species
- Body ovate, rufopiceous with reddish pronotal base. Antennae rufotestaceous. Pronotum trapezoid, widest basally; lateral beads narrow, slightly widened from apex to base; posterolateral angles acute, slightly projected laterally. Sides of elytra strongly rounded. Fig. 32. [Body length 6.1–6.3 mm; South Island (CO, OL)] *Amarophilus otagoensis* Laroche and Larivière, new species
- 3(1). Antennae bicolored, segments 1–4 rufotestaceous (infusate apically), 5–11 rufopiceous. Frontal furrows moderately deep, subparallel posteriorly. Pronotum slightly convex; sides slightly sinuate posteriorly; base narrower than elytral base. Elytra strongly convex; striae deep and coarsely punctate, stria 3 with two setiferous punctures. Fig. 33. [Body length 6.7–6.9 mm; South Island (OL)] *Amarophilus lomondensis* Laroche and Larivière, new species
- Antennae rufotestaceous. Frontal furrows very deep, convergent posteriorly. Pronotum moderately convex; sides not sinuate posteriorly; base as wide as elytral base. Elytra moderately convex; striae shallow and finely punctate, stria 3 without setiferous punctures. Fig. 34. [Body length 6.8–7.2 mm; South Island (OL)] *Amarophilus wanakensis* Laroche and Larivière, new species

Amarophilus rotundicollis Laroche and Larivière, new species

Fig. 31, 38

Amarophilus rotundicollis Laroche and Larivière, new species. Holotype: male (NZAC) labeled “NEW ZEALAND CO Old Man Ra [=Range] The Obelisk 24 Jan 2014 M. Gimmel, R. Leschen, J. Nunn (typed) / RL1785 -45.322933 169.20°E 1680m under rocks (typed) / Sp 81 (hand-written) / HOLOTYPE ♂ *Amarophilus rotundicollis* Laroche & Larivière, 2022 (red label; typed).” Paratype: one female (MONZ) from Nevis [=Nevis Crossing, CO], bearing a blue paratype label.

Description. Body length 5.8 mm; subovate. Head, pronotum, and elytra piceous black; abdomen rufopiceous; antennal segments 1–4 rufotestaceous, 5–11 rufopiceous; palpi rufotestaceous, slightly infusate; legs rufopiceous. Microsculpture isodiametric, strong on head (almost granulate), weak on pronotum and elytra. Iridescence absent. Shiny on head, pronotum, and elytra. **Head.** Labrum strongly transverse. Eyes subdepressed; setiferous puncture inserted medially on inner side of each eye. Frontal furrows moderately deep, subparallel posteriorly. **Thorax.** Pronotum strongly convex, impunctate, obsoletely wrinkled mediobasally, rounded, widest before middle; apex subtruncate; anterolateral angles poorly developed, angulate; anterior bead complete; sides strongly rounded, not sinuate posteriorly; lateral beads narrow throughout; lateral depressions absent; posterolateral angles rounded; laterobasal foveae rounded, moderately wide, moderately deep, not separated from lateral depressions by a pronounced convexity; posterior bead absent; base narrower than elytral base. **Legs.** Pro- and mesotarsomeres 1–4 of male moderately dilated. **Elytra.** Moderately convex. Shoulders slightly rounded. Sides slightly rounded. Striae shallow, finely punctate; stria 3 without setiferous punctures. Intervals depressed. Umbilicate series with 14 or 15 setiferous punctures. Apices obtusely rounded. **Aedeagus.** Not examined.

Material examined. 2 specimens (MONZ, NZAC).

Geographic distribution (Fig. 38). South Island: CO–Nevis Crossing. Old Man Range (Obelisk).

Ecology. Alpine. Epigeal. Fellfields. Open ground. Nocturnal; hides during the day under stones.

Biology. Seasonality: January–February. Predacious (based on mouthpart morphology).

Dispersal power. Subapterous (incapable of flight).

Collecting technique. Turning stones.

Remarks. This species is named after the Latin adjective *rotundus* and the Latin noun *collis*, referring to the rounded sides of the pronotum. This species is known only from one female and one male which was not dissected to preserve the integrity of the holotype. However, there is no ambiguity regarding the identity of this taxon. *Amarophilus rotundicollis* is morphologically close to *A. otagoensis* from which it can be distinguished by the following features: body subovate, piceous black; antennae bicolored, segments 1–4 rufotestaceous, 5–11 rufopiceous; pronotum rounded, widest before middle, with lateral beads narrow throughout and posterolateral angles rounded; sides of elytra slightly rounded. *Amarophilus rotundicollis* is known only from two South Island localities in western Central Otago (CO), while *A. otagoensis* occurs throughout Central Otago (CO) and is also known from Ben Lomond (OL).

***Amarophilus otagoensis* Larochelle and Larivière, new species**

Fig. 18, 32, 37

Amarophilus otagoensis Larochelle and Larivière, new species. Holotype: male (NZAC) labeled “NEW ZEALAND CO Old Man Rng [=Range] Headwaters Obelisk Ck [=Creek] 1380m 13-Jan-07 (typed) / Donated by J. Nunn (typed) / HOLOTYPE ♂ *Amarophilus otagoensis* Larochelle & Larivière, 2022 (red label; typed).” Paratypes: one male and two females (NZAC) from Old Man Range (CO), bearing blue paratype labels.

Description. Body length 6.1–6.3 mm; ovate. Head, pronotum, elytra, and abdomen rufopiceous; pronotal base reddish; antennae, palpi, and legs rufotestaceous. Microsculpture isodiametric, strong on head (almost granulate), weak on pronotum and elytra. Iridescence absent. Shiny on head, pronotum, and elytra. **Head.** Labrum strongly transverse. Eyes subdepressed; setiferous puncture inserted medially on inner side of each eye. Frontal furrows moderately deep, subparallel posteriorly. **Thorax.** Pronotum slightly convex, impunctate, unwrinkled, trapezoid, widest basally; apex strongly emarginate; anterolateral angles well developed, angulate; anterior bead complete; sides moderately rounded anteriorly, straight posteriorly; lateral beads narrow, slightly widened from apex to base; lateral depressions narrow anteriorly, widened posteriorly; posterolateral angles acute, slightly projected laterally; laterobasal foveae rounded, moderately wide, moderately deep, not separated from lateral depressions by a pronounced convexity; posterior bead complete; base as wide as elytral base. **Legs.** Pro- and mesotarsomeres 1–4 of both sexes strongly dilated. **Elytra.** Moderately convex. Shoulders slightly obtuse. Sides strongly rounded. Striae shallow, finely punctate; stria 3 without setiferous punctures. Intervals depressed. Umbilicate series with 14 or 15 setiferous punctures. Apices angulate. **Aedeagus.** Lateral view (Fig. 18): strongly arcuate, slender, moderately widened in apical half; base moderately convex dorsally; middle strongly convex dorsally, moderately concave ventrally, without dorsal membranous area; apex slightly concave dorsally and ventrally, with extreme tip very wide, rounded, curved downward. Dorsal view: asymmetrical (ostium of membranous area deflected to the right).

Material examined. 27 specimens (AMNZ, LUNZ, MONZ, NZAC).

Geographic distribution (Fig. 37). South Island: CO–Mount Pisa. Mount Salmond. Nevis Crossing. Rock and Pillar Range (McPhees Rock). Rock Peak (2 km E. Crown Range Saddle). Old Man Range (Headwaters of Obelisk Creek; near Summit; Symes Road). The Herrons Station. Umbrella Range (Gem Lake). OL–Ben Lomond.

Ecology. Alpine. Epigeal. Fellfields and tussock grasslands. Open ground. Nocturnal; hides during the day under stones.

Biology. Seasonality: October–April. Teneral: March. Predacious (based on mouthpart morphology).

Dispersal power. Subapterous (incapable of flight). Moderate runner.

Collecting techniques. Turning stones; pitfall trapping.

Remarks. This species is named after Central Otago (CO), the geographic area where the type locality is situated and the Latin suffix *-ensis*, denoting a place, locality, or country. *Amarophilus otagoensis* is morphologically close to *A. rotundicollis* from which it can be distinguished as follows: body ovate, rufopiceous with reddish pronotal base; antennae rufotestaceous; pronotum trapezoid, widest basally, with lateral beads narrow and slightly widened from apex to base, posterolateral angles acute and slightly projected laterally; sides of elytra strongly rounded. *Amarophilus otagoensis* occurs on the South Island, throughout Central Otago (CO) and is also known from Ben Lomond (OL), while *A. rotundicollis* is known only from two localities in western Central Otago (CO).

***Amarophilus lomondensis* Laroche and Larivière, new species**

Fig. 19, 33, 36

Amarophilus lomondensis Laroche and Larivière, new species. Holotype: male (AMNZ) labeled “[NEW ZEALAND OL] Ben Lomond Mt. [=Mount] 7-1-42 (hand-written) / C. E. Clark Collection (typed) / AMNZ 31970 Auckland Museum New Zealand (green label; typed) / HOLOTYPE ♂ *Amarophilus lomondensis* Laroche & Larivière, 2022 (red label; typed).” Paratypes: one male and two females (AMNZ) from the same locality as the holotype, bearing blue paratype labels.

Description. Body length 6.7–6.9 mm; subovate. Head, pronotum, elytra, and abdomen rufopiceous; antennal segments 1–4 rufotestaceous (infusate apically), 5–11 rufopiceous; palpi and legs rufotestaceous. Microsculpture weak, isodiametric (almost granulate) on head, isodiametric on pronotum, and moderately transverse (brick-like) on elytra. Iridescence present on elytra. Shiny on head, pronotum, and elytra. **Head.** Labrum strongly transverse. Eyes slightly convex; setiferous puncture inserted postmedially on inner side of each eye. Frontal furrows moderately deep, subparallel posteriorly. **Thorax.** Pronotum slightly convex, impunctate, obsolete wrinkled across base, trapezoid, widest basally; apex subtruncate; anterolateral angles poorly developed, obtuse; anterior bead incomplete, obsolete medially; sides slightly rounded anteriorly and oblique posteriorly, slightly sinuate posteriorly; lateral beads narrow, slightly widened from apex to base; lateral depressions narrow anteriorly, widened posteriorly; posterolateral angles acute, strongly projected laterally; laterobasal foveae rounded, moderately wide, very deep, separated from lateral depressions by a pronounced convexity; posterior bead obsolete; base narrower than elytral base. **Legs.** Pro- and mesotarsomeres 1–4 of both sexes moderately dilated. **Elytra.** Strongly convex. Shoulders slightly rounded. Sides strongly rounded. Striae deep, coarsely punctate; stria 3 with two poorly developed, fine setiferous punctures. Intervals depressed or slightly convex. Umbilicate series with 12 or 13 setiferous punctures. Apices angulate. **Aedeagus.** Lateral view (Fig. 19): strongly arcuate, slender, strongly widened in apical half; base moderately convex dorsally; middle strongly convex dorsally, strongly concave ventrally, without dorsal membranous area; apex bisinuate dorsally, almost straight ventrally, with extreme tip very wide, rounded. Dorsal view: asymmetrical (ostium of membranous area deflected to the right).

Material examined. 10 specimens (AMNZ).

Geographic distribution (Fig. 36). South Island: OL–Ben Lomond. Minaret Peaks.

Ecology. Alpine. Epigeal. Fellfields. Open ground. Probably nocturnal.

Biology. Seasonality: December–January. Predacious (based on mouthpart morphology).

Dispersal power. Subapterous (incapable of flight).

Collecting technique. Unknown.

Remarks. This species is named after the type locality Ben Lomond (OL) and the Latin suffix *-ensis* denoting a place, locality, or country. *Amarophilus lomondensis* is morphologically close to *A. wanakensis*. In addition to diagnostic characters of the male genitalia, *A. lomondensis* has the following distinguishing features: antennae bicolored, segments 1–4 rufotestaceous (infusate apically), 5–11 rufopiceous; frontal furrows moderately deep, subparallel posteriorly; pronotum slightly convex, with base narrower than elytral base and sides slightly sinuate posteriorly; elytra strongly convex, striae deep and coarsely punctate, stria 3 with two setiferous punctures. *Amarophilus lomondensis* and *A. wanakensis* occur in the Otago Lakes region (OL) of the South Island where they are known only from a few localities.

***Amarophilus wanakensis* Laroche and Larivière, new species**

Fig. 20, 34, 39

Amarophilus wanakensis Laroche and Larivière, new species. Holotype: male (AMNZ) labeled “[NEW ZEALAND OL] Minarets [=Minaret Peaks] (6000ft) Lake Wanaka 30.12.23. (hand-written) / C. E. Clarke Collection (typed) / AMNZ 31959 Auckland Museum New Zealand (green label; typed) / HOLOTYPE ♂ *Amarophilus wanakensis* Laroche & Larivière, 2022 (red label; typed).” Paratypes: three females (AMNZ) from the same locality as the holotype, bearing blue paratype labels.

Description. Body length 6.8–7.2 mm; ovate. Head, pronotum, elytra, and abdomen rufopiceous; antennae, palpi, and legs rufotestaceous. Microsculpture isodiametric on head (almost granulate) and pronotum, moderately transverse on elytra. Iridescence present on elytra. Shiny on head, pronotum, and elytra. **Head.** Labrum strongly transverse. Eyes slightly convex; setiferous puncture inserted postmedially on inner side of each eye. Frontal furrows very deep, convergent posteriorly. **Thorax.** Pronotum moderately convex, impunctate, obsolete wrinkled across base, trapezoid, widest basally; apex subtruncate; anterolateral angles poorly developed, obtuse; anterior bead complete; sides moderately rounded anteriorly, straight posteriorly; lateral beads narrow, slightly widened from apex to base; lateral depressions absent anteriorly, wide posteriorly; posterolateral angles subrectangular; laterobasal foveae rounded, moderately wide, very deep, separated from lateral depressions by a pronounced convexity; posterior bead obsolete; base as wide as elytral base. **Legs.** Pro- and mesotarsomeres 1–4 of both sexes strongly dilated. **Elytra.** Moderately convex. Shoulders slightly obtuse. Sides strongly rounded. Striae shallow, finely punctate; stria 3 without setiferous punctures. Intervals slightly convex. Umbilicate series with 14 or 15 setiferous punctures. Apices angulate. **Aedeagus.** Lateral view (Fig. 20): strongly arcuate, slender, moderately widened in apical half; base moderately convex dorsally; middle moderately convex dorsally, moderately concave ventrally, without dorsal membranous area; apex moderately concave dorsally and ventrally, with extreme tip very wide, rounded, hooked dorsally. Dorsal view: asymmetrical (ostium of membranous area deflected to the right).

Material examined. 11 specimens (AMNZ).

Geographic distribution (Fig. 39). South Island: OL–Minaret Peaks and vicinity.

Ecology. Alpine. Epigeal. Fellfields and tussock grasslands. Open ground. Probably nocturnal.

Biology. Seasonality: December. Teneral: December. Predacious (based on mouthpart morphology).

Dispersal power. Subapterous (incapable of flight).

Collecting technique. Unknown.

Remarks. This species is named after the Lake Wanaka region (OL) where the type locality is situated and the Latin suffix *-ensis*, denoting a place, locality, or country. *Amarophilus wanakensis* is morphologically close to *A. lomondensis*. In addition to diagnostic characters of the male genitalia, *A. wanakensis* has the following distinguishing features: antennae rufotestaceous; frontal furrows very deep, convergent posteriorly; pronotum moderately convex, its base as wide as elytral base and sides not sinuate posteriorly; elytra moderately convex, striae shallow and finely punctate, stria 3 without setiferous punctures. *Amarophilus wanakensis* and *A. lomondensis* occur in the Otago Lakes region (OL) of the South Island where they are known only from a few localities.

Acknowledgments

For the opportunity to examine material in their care, the authors thank J. M. W. Marris (Entomology Research Collection, Lincoln University, Lincoln, New Zealand), J. W. Early and R. Moore (Auckland War Memorial Museum, Auckland, New Zealand), P. Sirvid (Museum of New Zealand Te Papa Tongarewa, Wellington, New Zealand), and J. Nunn (Dunedin, New Zealand).

The authors wish to thank the following peer reviewers for their helpful comments and suggestions to improve the manuscript: R. Davidson (Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, U.S.A.) and R. J. B. Hoare (Manaaki Whenua-Landcare Research, Auckland, New Zealand).

The authors are indebted to G. Hall and S. Tassell (Manaaki Whenua-Landcare Research, Auckland) for technical assistance with the curation of the New Zealand Arthropod Collection (Auckland) and material borrowed from other collections. They are also grateful to H. Goulet for his splendid photo of *Amarotypus edwardsii* for the cover.

This research was done using the authors' personal time and resources. Additional in-kind support was also provided by the New Zealand Arthropod Collection (Auckland) which receives funding from MBIE (Ministry of Business, Innovation and employment) to Manaaki Whenua-Landcare Research within the Biota Portfolio.

The authors are delighted to dedicate this work to our friend and colleague John Nunn (Dunedin, New Zealand) in acknowledgement of his efforts over decades to build one of the most valuable collection of New Zealand Carabidae and for his great generosity in depositing this material in the New Zealand Arthropod Collection.

Literature Cited

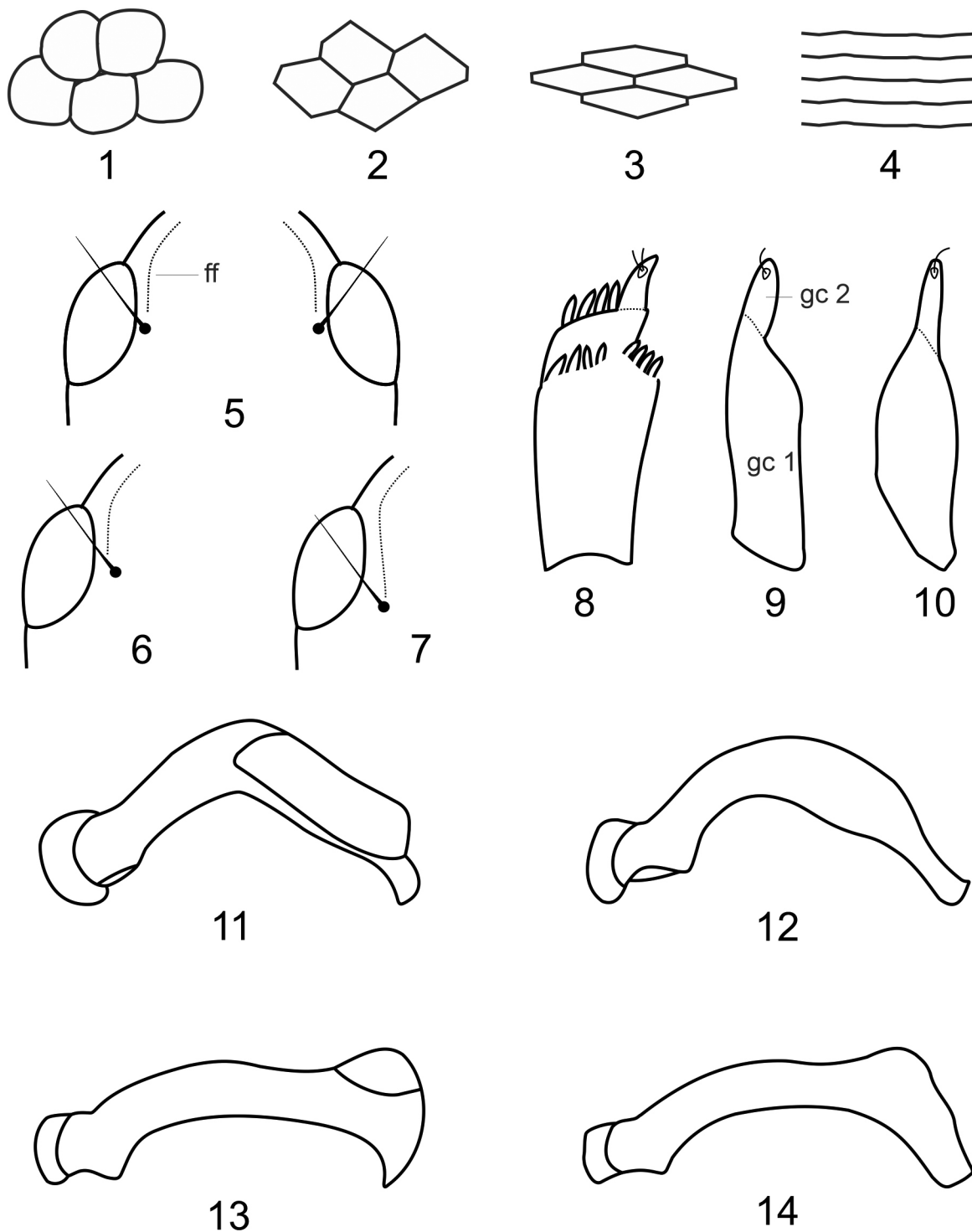
- Arndt E. 1998.** Phylogenetic investigation of Carabidae (Coleoptera) using larval characters. p. 171–190. In: Ball GE, Casale A, Taglianti AV (eds.). Phylogeny and classification of Caraboidea (Coleoptera: Adephaga). Proceedings of a Symposium (28 August, 1996, Florence, Italy). XX International Congress of Entomology. Atti Museo Regionale di Scienze Naturali; Torino. 543 p.
- Baehr M. 2009.** A new genus and two new species of the subfamily Migadopinae from Tasmania (Coleoptera: Carabidae). *Folia Heyrovskyana*, series A, 17: 95–103.
- Bates HW. 1872.** Notes on Cicindelidae and Carabidae, and descriptions of new species (No. 16). *Entomologists's Monthly Magazine* 9: 49–52.
- Crosby TK, Dugdale JS, Watt JC. 1976.** Recording specimen localities in New Zealand: an arbitrary system of areas and codes defined. *New Zealand Journal of Zoology* 3: 1–69 + maps.
- Crosby TK, Dugdale JS, Watt JC. 1998.** Area codes for recording specimen localities in the New Zealand subregion. *New Zealand Journal of Zoology* 25: 175–183.
- Deuve T. 1993.** L'abdomen et les genitalia des femelles des coléoptères Adephaga. *Mémoires du Muséum d'Histoire Naturelle. Tome 155 (Série A, Zoologie)*: 1–184.
- Erwin TL. 1985.** The taxon pulse: a general pattern of lineage radiation and extinction among carabid beetles. p. 437–472. In: Ball GE (ed.). *Taxonomy, phylogeny and zoogeography of beetles and ants*. Junk; Dordrecht. 514 p.
- Hoare RJB, Millar IR, Richardson SJ. 2016.** The insect fauna of granite sand plains: a naturally rare ecosystem in New Zealand. *New Zealand Entomologist* 39: 1–14.
- Jeannel R. 1938.** Les migadopides [Coleoptera Adephaga], une lignée subantarctique. *Revue Française d'Entomologie* 5: 1–55.
- Larochelle A, Larivière M-C. 2001.** Carabidae (Insecta: Coleoptera): catalogue. *Fauna of New Zealand* 43: 1–281.
- Larochelle A, Larivière M-C. 2003.** A natural history of the ground-beetles (Coleoptera: Carabidae) of America north of Mexico. Pensoft; Sofia-Moscow. 583 p.
- Larochelle A, Larivière M-C. 2005.** Harpalini (Insecta: Coleoptera: Carabidae: Harpalinae). *Fauna of New Zealand* 53: 1–160.
- Larochelle A, Larivière M-C. 2007.** Carabidae (Insecta: Coleoptera): synopsis of supraspecific taxa. *Fauna of New Zealand* 60: 1–188.
- Larochelle A, Larivière M-C. 2013.** Carabidae (Insecta: Coleoptera): synopsis of species, Cicindelinae to Trechinae (in part). *Fauna of New Zealand* 69: 1–193.
- Larochelle A, Larivière M-C. 2015.** Synopsis of the genus *Bembidion* Latreille in New Zealand (Coleoptera: Carabidae: Bembidiini). *Insecta Mundi* 0415: 1–78.
- Larochelle A, Larivière M-C. 2016.** Taxonomic Supplement (2001 to 2015) to the Catalogue of New Zealand Carabidae (Insecta: Coleoptera). *Insecta Mundi* 0502: 1–53.
- Larochelle A, Larivière M-C. 2017.** Synopsis of the tribe Zolini in New Zealand (Coleoptera: Carabidae). *Insecta Mundi* 0594: 1–110.
- Larochelle A, Larivière M-C. 2021.** Synopsis of the tribe Platynini in New Zealand (Coleoptera: Carabidae). *Insecta Mundi* 0864: 1–96.
- Liebherr JK, Will KW. 1998.** Inferring phylogenetic relationships within the Carabidae (Insecta, Coleoptera) from characters of the female reproductive tract. p. 107–170. In: Ball GE, Casale A, Taglianti AV (eds.). Phylogeny and classification of Caraboidea (Coleoptera: Adephaga). Proceedings of a Symposium (28 August, 1996, Florence, Italy). XX International Congress of Entomology. Atti Museo Regionale di Scienze Naturali; Torino. 543 p.

Received April 5, 2022; accepted May 26, 2022.

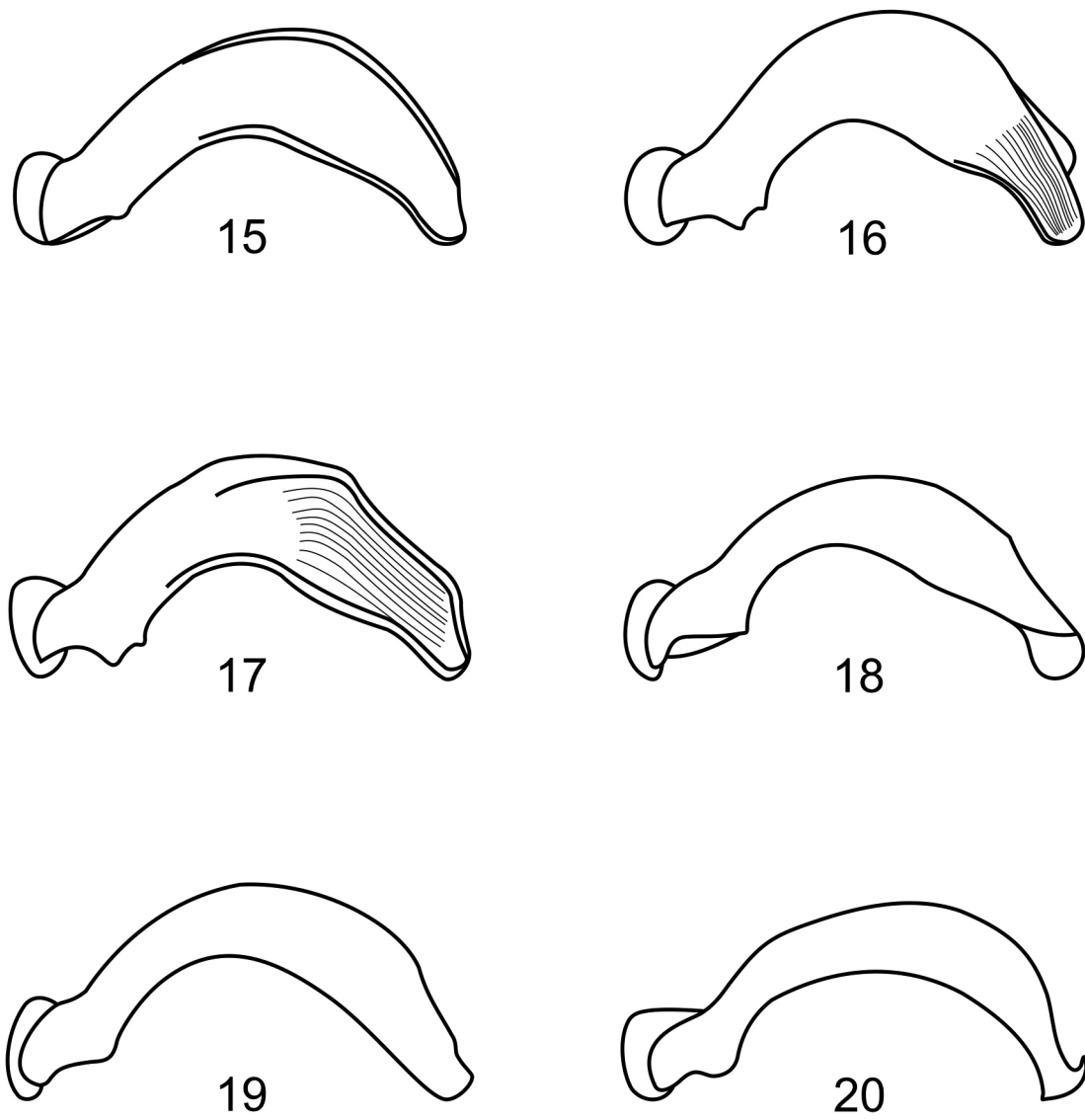
Review editor Paul E. Skelley.

Appendix 1. Geographic coordinates of localities in decimal degrees.

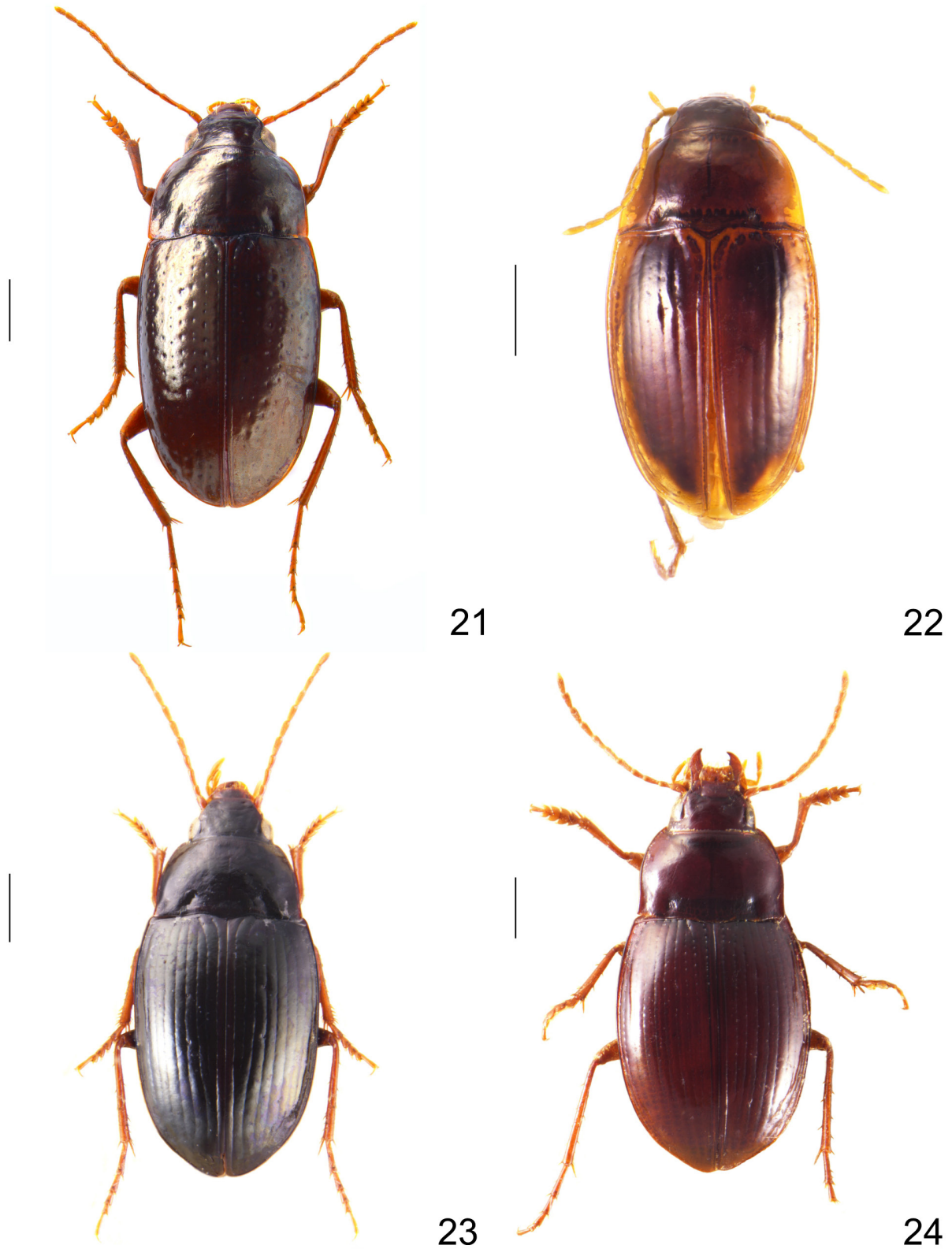
Locality	Area code	Latitude	Longitude
Bauza Island	FD	-45.2901	166.9154
Ben Lomond	OL	-45.0086	168.6142
Breaksea Sound	FD	-45.5838	166.6618
Castle Rocks Valley	WD	-43.4530	170.1669
Chancellor area, Fox Glacier	WD	-43.5043	170.1162
Dart River (head), Lookout Range	NN	-41.5676	172.6075
Doubtful Sound	FD	-45.3809	167.0910
Fiordland National Park	FD	-45.3800	167.2800
Fox Glacier	WD	-43.4660	170.0199
Gem Lake, Umbrella Range	CO	-45.5706	169.1063
Hawkdun Range	CO	-44.6990	169.9492
Kahurangi National Park	NN	-41.1155	172.4753
McPhees Rock, Rock and Pillar Range	CO	-45.4600	169.9800
Minaret Peaks	OL	-44.4334	168.9973
Mount Glasgow	NN	-41.5889	172.0542
Mount Hutt Skifield	MC	-43.4947	171.5365
Mount Moltke	WD	-43.4597	170.1511
Mount Pisa	CO	-44.8720	169.1907
Mount Salmond	CO	-45.0715	168.8888
Murchison Mountains	FD	-45.2602	167.5512
Nevis Crossing	CO	-45.1757	168.9851
Obelisk Creek (headwaters), Old Man Range	CO	-45.3405	169.2540
Obelisk, Old Man Range	CO	-45.3230	169.2071
Ohau Skifield	MK	-44.2203	169.7784
Old Man Range	CO	-45.3668	169.2035
Olivine Range	WD	-44.3063	168.4643
Rainbow Skifield, Saint Arnaud Range	MB	-41.8670	172.8578
Rock Peak, 2 km E. Crown Range Saddle	CO	-44.9881	168.9678
Saint Bathans Range	CO	-44.7225	169.7572
Secretary Island	FD	-45.2556	166.9458
Simonin Pass	WD	-44.3402	168.3682
Symes Road, Old Man Range	CO	-45.3432	169.2086
Takahe Valley	FD	-45.2891	167.6574
The Herrons Station (vicinity)	CO	-45.3600	169.2800
The Hump	FD	-46.1071	167.3271
Westland National Park	WD	-43.5000	170.1667
Wilmot Pass	FD	-45.5081	167.1925



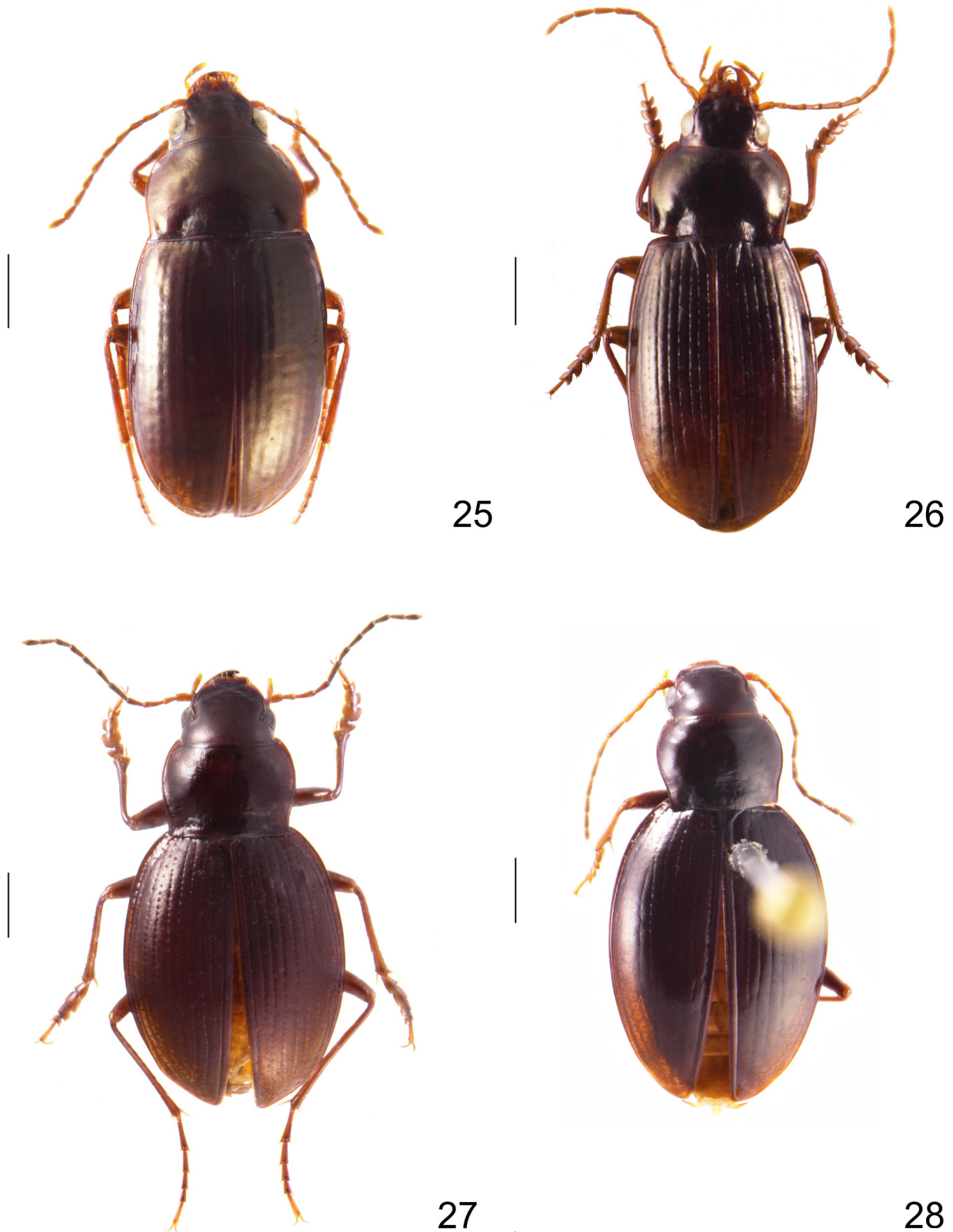
Figures 1–14. Amarotypini morphology. 1–4) Microsculpture. 1) Granulate. 2) Isodiametric. 3) Moderately transverse. 4) Very transverse. 5–7) **Head.** 5) Setiferous punctures medial, close to eye, frontal furrows (ff) subparallel posteriorly. 6) Punctures medial, distant from eye, furrows subparallel posteriorly. 7) Punctures post-medial, distant from eye, furrows convergent posteriorly. 8–10) Gonocoxites 1 (gc 1) and 2 (gc 2). 8) *Amarotypus*. 9) *Amaroxenus*. 10) *Amarophilus*. 11–14) Aedeagus, lateral. 11) *Amarotypus edwardsii*. 12) *Amarotypus takaheensis* new species. 13) *Amarotypus fiordlandensis* new species. 14) *Amarotypus murchisonorum* new species.



Figures 15–20. Aedeagus, lateral. **15)** *Amaroxenus glacialis* new species. **16)** *Amaroxenus huttensis* new species. **17)** *Amaroxenus kahurangiensis* new species. **18)** *Amarophilus otagoensis* new species. **19)** *Amarophilus lomondensis* new species. **20)** *Amarophilus wanakensis* new species.



Figures 21–24. Dorsal habitus. 21) *Amarotypus edwardsii*. 22) *Amarotypus simoninensis* new species (holotype). 23) *Amarotypus takaheensis* new species (paratype). 24) *Amarotypus glasgowensis* new species (holotype). Scale line = 1 mm.



Figures 25–28. Dorsal habitus. 25) *Amarotypus fiordlandensis* new species. 26) *Amarotypus purchisonorum* new species. 27) *Amaroxenus glacialis* new species. 28) *Amaroxenus arnaudensis* new species (holotype). Scale line = 1 mm.



29



30



31



32

Figures 29–32. Dorsal habitus. 29) *Amaroxenus huttensis* new species. 30) *Amaroxenus kahurangiensis* new species. 31) *Amarophilus rotundicollis* new species (holotype). 32) *Amarophilus otagoensis* new species. Scale line = 1 mm.



Figures 33–34. Dorsal habitus. 33) *Amarophilus lomondensis* new species. 34) *Amarophilus wanakensis* new species. Scale line = 1 mm.

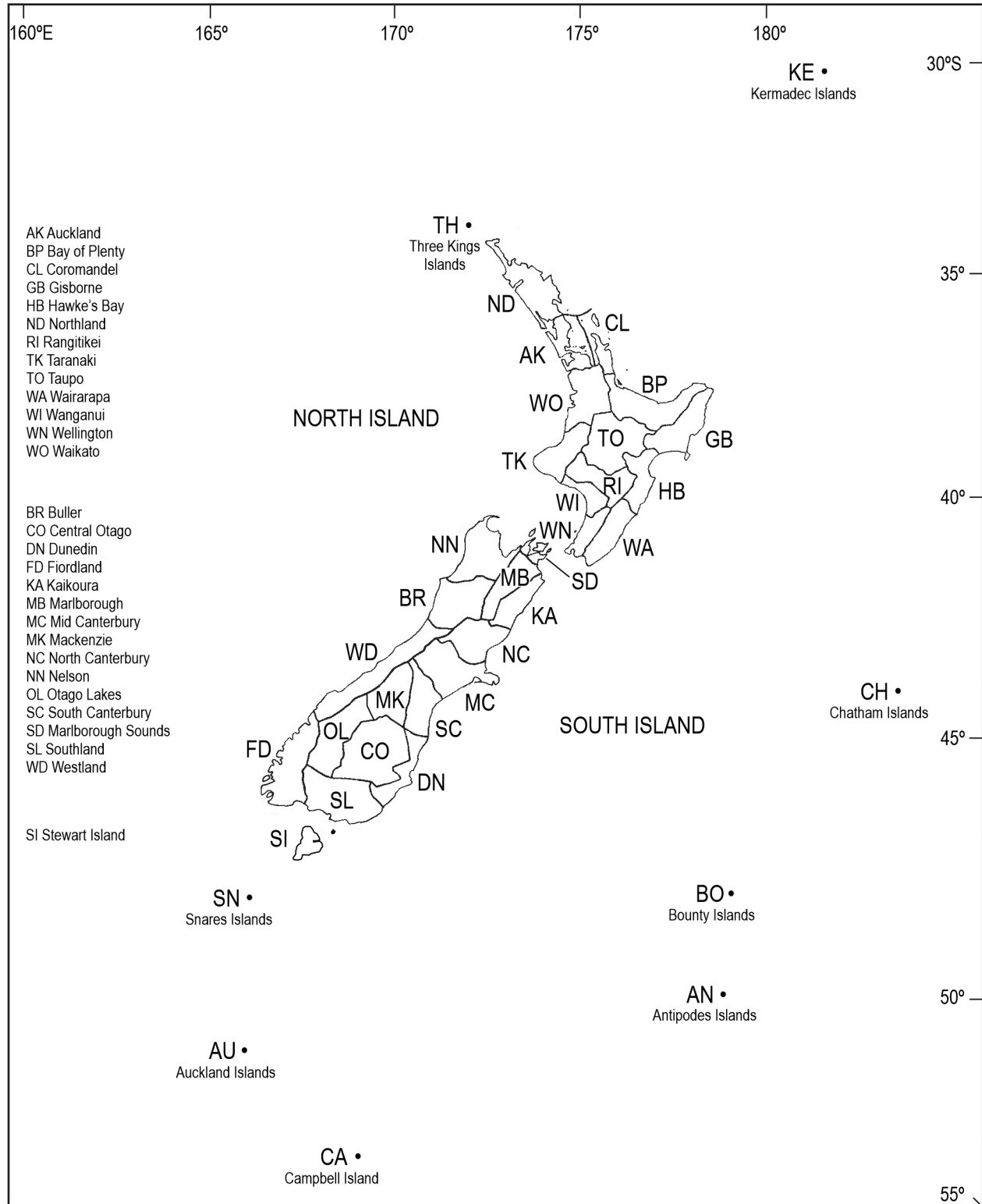
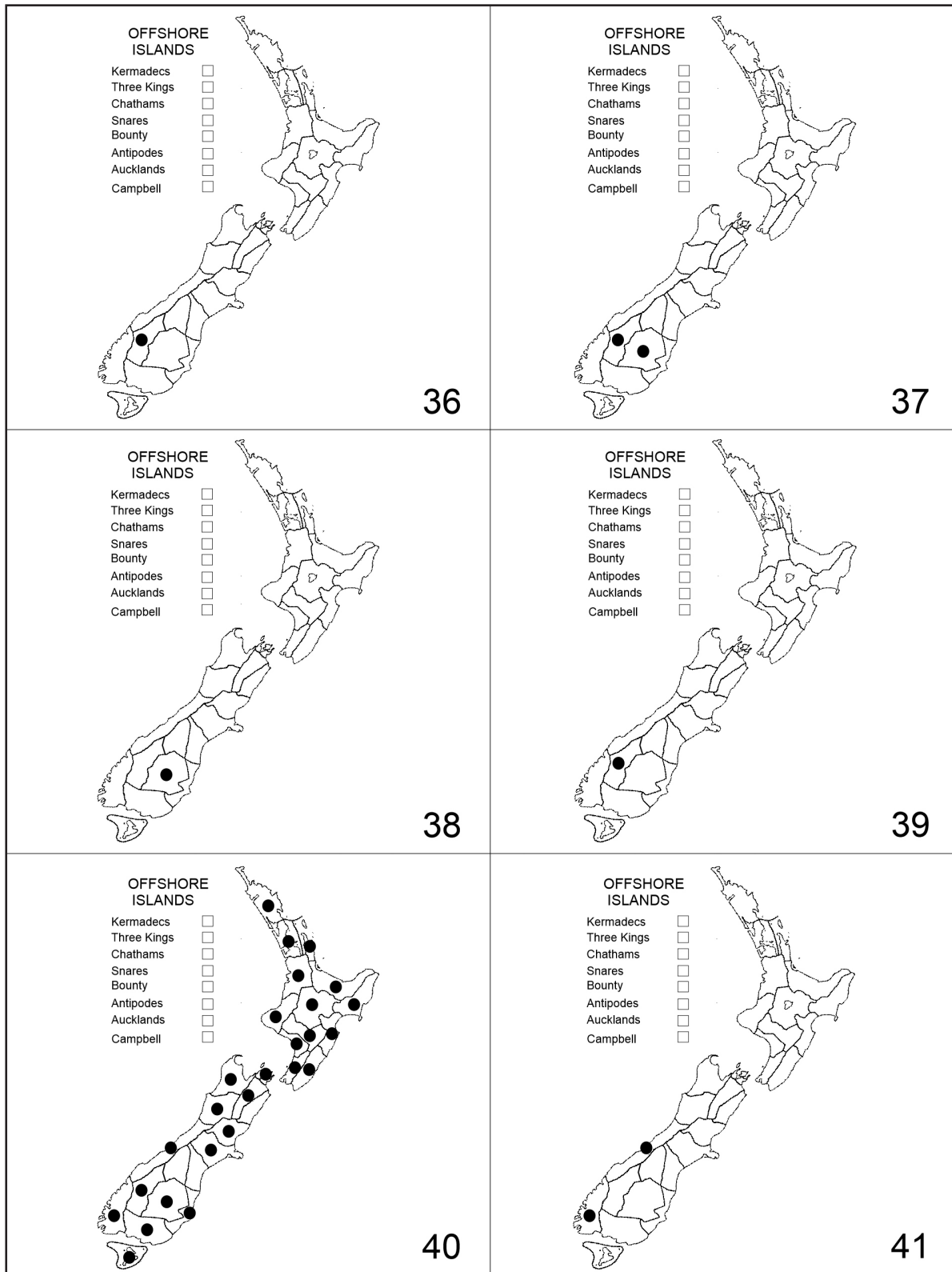
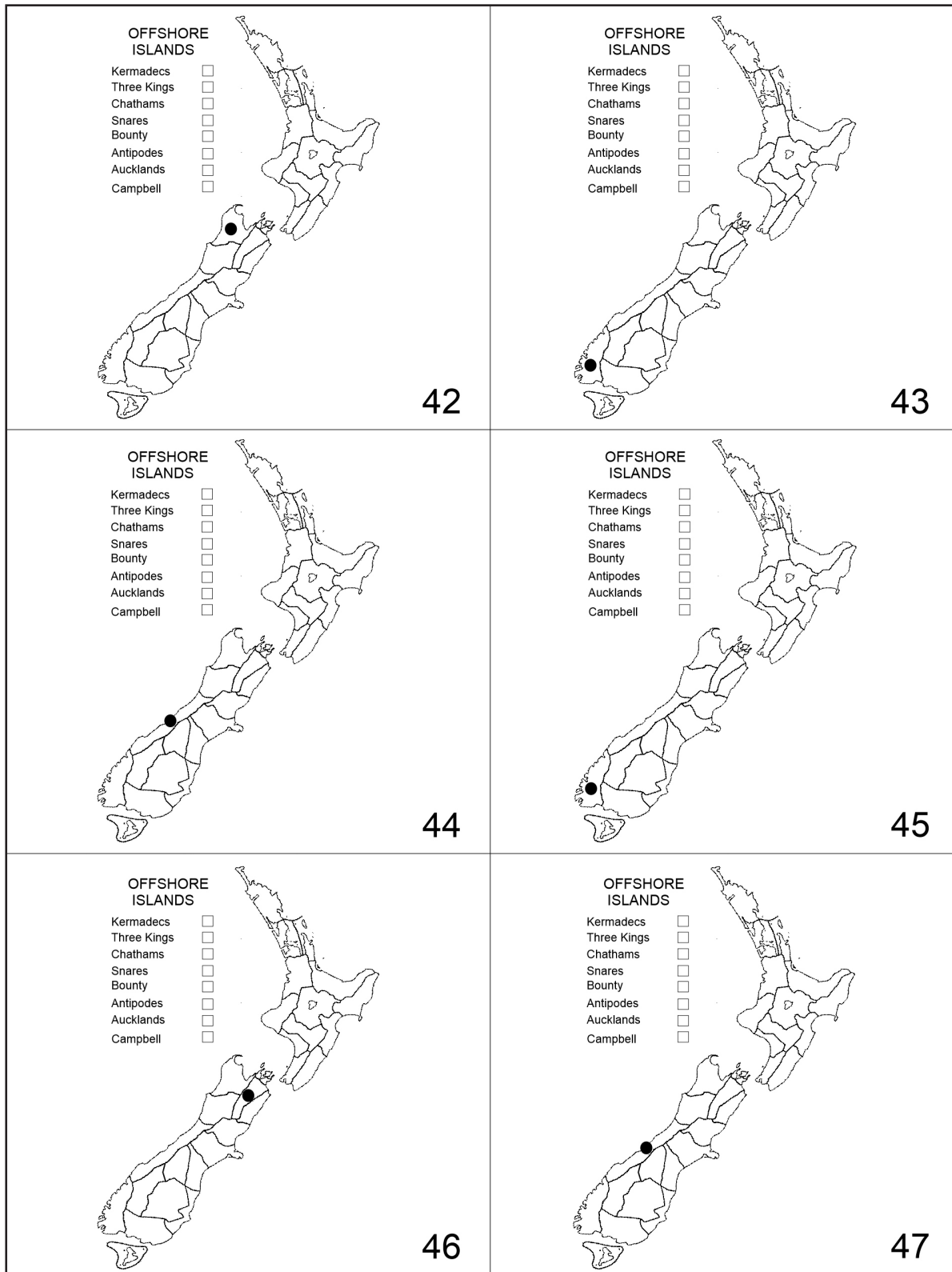


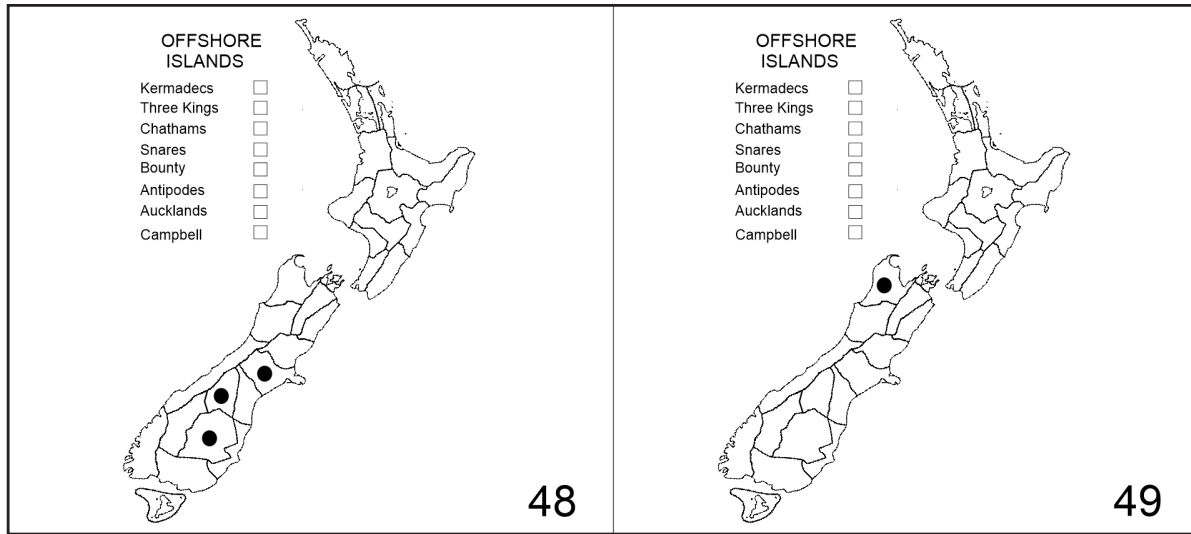
Figure 35. Map of New Zealand, outlying islands, areas and area codes.



Figures 36–41. Species distribution maps. **36)** *Amarophilus lomondensis* new species. **37)** *Amarophilus otagoensis* new species. **38)** *Amarophilus rotundicollis* new species. **39)** *Amarophilus wanakensis* new species. **40)** *Amarotypus edwardsii*. **41)** *Amarotypus fiordlandensis* new species.



Figures 42–47. Species distribution maps. 42) *Amarotypus glasgowensis* new species. 43) *Amarotypus munchisonorum* new species. 44) *Amarotypus simoninensis* new species. 45) *Amarotypus takaheensis* new species. 46) *Amaroxenus arnaudensis* new species. 47) *Amaroxenus glacialis* new species.



Figures 48–49. Species distribution maps. **48)** *Amaroxenus huttensis* new species. **49)** *Amaroxenus kahurangiensis* new species.