

**Fauna of
New Zealand**
Ko te Aitanga Pepeke
o Aotearoa

The Copyright notice printed on page 4 applies to the use of this PDF.

This PDF is not to be posted on websites.

Links should be made to:

FNZ.LandcareResearch.co.nz

EDITORIAL BOARD

Dr R. M. Emberson, *c/- Department of Ecology, P.O. Box 84, Lincoln University, New Zealand*

Dr M. J. Fletcher, *Director of the Collections, NSW Agricultural Scientific Collections Unit, Forest Road, Orange, NSW 2800, Australia*

Dr R. J. B. Hoare, *Landcare Research, Private Bag 92170, Auckland, New Zealand*

Dr M.-C. Larivière, *Landcare Research, Private Bag 92170, Auckland, New Zealand*

Mr R. L. Palma, *Natural Environment Department, Museum of New Zealand Te Papa Tongarewa, P.O. Box 467, Wellington, New Zealand*

SERIES EDITOR

Dr T. K. Crosby, *Landcare Research, Private Bag 92170, Auckland, New Zealand*

Fauna of New Zealand
Ko te Aitanga Pepeke o Aotearoa

Number / Nama 63

Auchenorrhyncha

(Insecta: Hemiptera): catalogue

M.-C. Larivière¹, M. J. Fletcher², and A. Laroche³

^{1,3} Landcare Research, Private Bag 92170, Auckland, New Zealand

**² Industry & Investment NSW, Orange Agricultural Institute,
Orange NSW 2800, Australia**

¹ LariviereM@landcareresearch.co.nz, ² murray.fletcher@industry.nsw.gov.au,

³ Larocheandre@hotmail.com

with colour photographs by B. E. Rhode



**Manaaki
Whenua
P R E S S**

**Lincoln, Canterbury, New Zealand
2010**

Copyright © Landcare Research New Zealand Ltd 2010

No part of this work covered by copyright may be reproduced or copied in any form or by any means (graphic, electronic, or mechanical, including photocopying, recording, taping information retrieval systems, or otherwise) without the written permission of the publisher.

Cataloguing in publication

Larivière, Marie-Claude

Auchenorrhyncha (Insecta: Hemiptera) : catalogue / M.-C. Larivière, M. J. Fletcher and A. Larochelle ; with colour photographs by B. E. Rhode. – Lincoln, Canterbury, N.Z. : Manaaki Whenua Press, 2010. (Fauna of New Zealand, ISSN 0111-5383 (print), ISSN 1179-7193 (online) ; no. 63).
ISBN 978-0-478-34720-3 (print)
ISBN 978-0-478-34721-0 (online)

I. Fletcher, M. J. II. Larochelle, André, 1940 Apr. 10– III. Title IV. Series

UDC 595.753

Suggested citation:

Larivière, M.-C.; Fletcher, M. J.; Larochelle, A. 2010. Auchenorrhyncha (Insecta: Hemiptera): catalogue. *Fauna of New Zealand* 63, 232 pp.

Prepared for publication by the series editor and the authors using computer-based text processing, layout, and printing at Landcare Research, Private Bag 92170, Auckland, New Zealand. Colour photographs prepared by Dr B. E. Rhode using a 3-CCD colour video camera, software to increase depth-of-field, and the photoprocessing software PhotoShop®

To access on-line extracts and medium-resolution pdfs from this series visit:
<http://fnz.landcareresearch.co.nz/>

Māori text by H. Jacob, Ōtaki.

Published by Manaaki Whenua Press, Landcare Research, P.O. Box 40, Lincoln, Canterbury, N.Z.
Website: <http://www.mwpress.co.nz/>

Printed by PrintLink Ltd, Wellington

Date of publication 16 June 2010

Front cover: *Thanatodictya tillyardi* Myers, family Dictyopharidae (Illustrator: D. W. Helmore).

Publication of the *Fauna of New Zealand* series is the result of a research investment by the Foundation for Research, Science and Technology.

POPULAR SUMMARY

HE WHAKARĀPOPOTOTANGA

Class Insecta

Order Hemiptera

Suborder Auchenorrhyncha

Cicadas, leafhoppers, planthoppers, and allies (Auchenorrhyncha)

The Auchenorrhyncha are generally regarded as a suborder of the Hemiptera. They include planthoppers, cicadas, froghoppers, spittlebugs, treehoppers, and leafhoppers. These insects are highly diverse and form a major component of the plant-feeding fauna of most terrestrial ecosystems. Auchenorrhyncha have adopted varied life habits on nearly all continents and islands (except Antarctica) and there may be around 42 000 species described worldwide. The world fauna is divided into roughly 30 to 40 families. The number of species of better known continental faunas such as North America, Europe or Australia may include thousands of species. Compared with these larger regions the New Zealand fauna – currently comprising 12 families, 68 genera and 196 species – may appear relatively small but what it lacks in size it makes up for in uniqueness, e.g., 82% of known species do not occur anywhere else in the world. From this point of view New Zealand can be regarded as a biodiversity “hot spot” for this group of insects. New genera and species will be discovered in the future and once fully described the New Zealand fauna may reach 300 to 350 species.

Auchenorrhyncha can be distinguished from other Hemiptera suborders on the basis of three main characteristics: sucking mouthparts in the form of a beak extending from the back of the head – the name Auchenorrhyncha literally means “neck-beaks”; relatively short and bristle-like antennae; and forewings of uniform texture (entirely membranous or leathery) resting rooflike over the abdomen.

In this volume, four questions most commonly asked about a group of insects are being answered: What, where, when and how? What Auchenorrhyncha occur in New Zealand, what is their status (e.g., native, introduced from elsewhere, pests, disease vectors)? What are the resources available to identify and study them? Where do species and genera occur (e.g., geographic distribution in New Zealand and overseas, habitats, dispersal abilities)? When are they active (e.g., seasonal activity, mating, egg-laying, wintering)? How do they live (e.g., food preferences, hostplants, natural enemies)?

New Zealand Auchenorrhyncha are generally active during the day and live in lowland to mountain forests and shrublands, although a number of groups are typically found in more open habitats, such as tussock grasslands, and in subalpine environments. Native species usually live within the confines of their natural habitats but some species also live in modified ecosystems and exotic tree plantations. Depending on families and genera, species can be predominantly active on low plants, trees and shrubs, or even the ground surface. Hostplants are known for less than 20% of species. The recognisable features and biology of the immature stages (nymphs) are unknown for the majority of species. Anecdotal evidence suggests that parasitic wasps, birds, predatory beetles, spiders, and mites may be among the major natural enemies of New Zealand Auchenorrhyncha. Overall, about 25% of the fauna is short-winged or wingless. Active dispersal by flight is therefore unlikely for these species.

(continued overleaf)

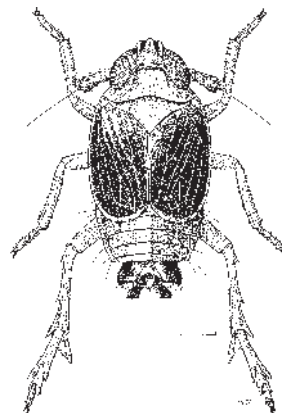


Illustration / Whakaahua: *Sulix tasmani* (Muir), family Delphacidae (Illustrator / Kaiwhakaahua: D. W. Helmore).

Ngā kihikihi, ngā peke-rau, ngā peke-tipu, me ō rātou uri tata (arā, a ngāi Auchenorrhyncha)

E whakaaetia nuitia ana he pūtoi-iti a ngāi Auchenorrhyncha nō ngāi Hemiptera. Kei tēnei karangatanga ngā ngārara peke-tipu, ngā kihikihi, ngā peke-poraka, ngā pītara-tuha, ngā peke-rākau, me ngā peke-rau. He matahuhua tonu te rōpū nei, ā, ko rātou tētahi wāhanga nui o ngā hanga ora kai tipu o ngā pūnaha hauropi noho papa. He maha ā rātou urutaunga taha whanonga i ngā whenua me ngā moutere katoa (hāunga anō Te Kōpakatanga ki te Tonga), ā, e whakapaetia ana kei te āhua 42 000 ngā momo i ngā tini kokonga o te ao, kua oti te whakaahua ā-kupu. Nō ngā whānau e 30–40 ēnei momo. Tērā pea kei ngā mano ngā momo o ētahi o ngā taupori e kaha ake ana te mōhiotia, pērā i ērā o Amerika ki te Raki, o Ūropi, o Ahitereiria. Ina whakatairitea ngā mea o konei ki ērā, he huinga iti tonu, inā rā, 12 ngā whānau, e, 68 ngā puninga, 196 ngā momo. Engari ahakoa iti, he pounamu. Inā rā, ko tētahi 82% o ngā momo o konei e mōhiotia ana, kāore i whenua kē. Nā reira me kī pēnei ake, he wāhi whakahirahira a Aotearoa mō te matahuhua-koiōra o tēnei karangatanga pepeke. Kāore e kore ka kitea he puninga anō, he momo anō ā tōna wā, ā, ina oti te whakaahua ā-kupu, tērā ka piki te maha o ngā momo ki te 300–350.

E toru ngā āhuatanga matua e noho wehe ai ngā Auchenorrhyncha i ērā atu pūtoi-iti o ngāi Hemiptera: ko ngā wāhanga ngote o te waha – arā, he ngutu e toro ana atu i te murikōkai — ko te tikanga hoki o te ingoa Auchenorrhyncha, ko te “ngutu-kaki”; ko te poto o ngā pūhihi — me te tarakina te rite; kotahi anō te kakano o ngā parihau o mua (he kiriuhi katoa, he kirikau katoa rānei) e noho ‘tuanui’ mai ana ki te puku.

I tēnei putanga, ka whakautua ngā momo pātai e whā e uia nuitia ana mō ngā aitanga pepeke, koia ēnei: He aha, kei hea, āhea, pēhea? He aha ngā Auchenorrhyncha kei Aotearoa e noho ana, he aha ō rātou tūrangā (e.g., he momo māori, he rāwaho, he momo takakino, he whakawhiti tahumaero)? He aha ngā rauemi e wātea ana hei tautohu, hei rangahau i ngā pepeke nei? Kei hea ake ngā momo me ngā puninga (e.g., i Aotearoa, i tāwāhi, ngā kāinga noho, te kaha ki te whakapīrara haere)? Āhea ka kori ake (e.g., ngā koringa ā-kaupeka, te whakaputa uri, te whānau hua, te āhua i te takuruā)? He pēhea te āhua o te noho (e.g., ngā tino kai, ngā tipu ka āta nohoia, ngā hoariri māori)?

(haere tonu)

The described New Zealand fauna, with 196 species, is about 13% the size of the known Australian fauna which has around 1500 species. Currently, 15 families of Auchenorrhyncha occurring in Australia are not found in New Zealand. The number of recognised introduced species in New Zealand is currently 24, or about 12% of the total fauna. No family is endemic to (exclusively occurring in) New Zealand but all ground-dwelling leafhoppers (family Myerslopiidae) are endemic, accounting for 70% of world species in this group. The three largest families in New Zealand are the leafhoppers or Cicadellidae (78 species or 40% of the fauna), cicadas or Cicadidae (34 species or 17%), and cixiid planthoppers or Cixiidae (26 species or 13%). These families are also well represented in Australia.

Most species shared with Australia and other parts of the world are cosmopolitan and probably introduced. Native species shared with regions neighbouring New Zealand are mostly in common with eastern continental Australia, to a lesser degree with Tasmania and Norfolk Island, and in some instances with Lord Howe Island and New Caledonia. Such faunal affinities may be indicative of an old Gondwanan origin. As in many parts of the world the family Cicadellidae (leafhoppers) is taxonomically diverse and this is where most faunal affinities are observed, followed by the family Delphacidae (delphacid planthoppers). At the generic level New Zealand shares 40% of its native genera with Australia (as including Tasmania, Norfolk Island, Lord Howe Island), or 20 out of 50 native genera. At the species level this is approximately 5%.

The species distribution maps provided show most species to be more widely distributed in New Zealand than previously thought. Even well-studied species occur in more areas of the country than previously recognised. Nevertheless, roughly 95 native species, or 55% of the entire native fauna, are known from ten populations or fewer. These populations are of potential interest to insect conservation.

A greater number of species (133) occur on the South Island and 64 native species are restricted to this island. A slightly lower number of species (119) occur on the North Island, including 44 native species restricted to this island. As many as 65 taxa are shared between the North and the South Island. Offshore island groups are known to harbour a limited number of native species: Chatham Islands (12), Kermadec Islands (10), Three Kings Islands (21). Auchenorrhyncha have never been recorded from New Zealand's subantarctic islands (Antipodes, Auckland, Bounties, Campbell Island or Snares).

On New Zealand's main islands, the areas so far known to contain the highest diversity are the Northland, Auckland, and Wellington regions on the North Island, and the North-west Nelson and Mid Canterbury regions on the South Island. However, some of these regions contain many species introduced from Australia and elsewhere. For the biologist, the areas known to have the greatest number of local endemics – species only found in a single region of New Zealand and nowhere else in the world – are the most interesting. This is the case of the Northland and Wellington regions on the North Island, and the Northwest Nelson, Marlborough, Mid Canterbury, Fiordland and Southland regions on the South Island. The largely unexplored and unspoilt area of Fiordland is likely to provide an even greater reservoir of endemism than currently estimated.

The regions with the largest number of introduced species are relatively warm parts of New Zealand as well as its main trading ports or agricultural areas (Auckland, Hawkes Bay, Nelson, Christchurch). Many introduced species have fully developed wings and good dispersal abilities, some are attracted to artificial lights, and most can adapt well to living in highly or partly modified environments.

Ko te nuinga o ngā Auchenorrhyncha o Aotearoa, he kori awatea. Kitea ai i ngā ngahere me ngā wāhi ururua mai i ngā whenua hakahaka, piki atu ki ngā maunga, otirā ko ētahi kei te takiraha, kei ngā whenua pātītī, me ngā taiao āhua mārakerake i ngā maunga. Ko te nuinga o ngā momo māori, ka noho whāiti ki ō rātou rīpoinga māori tūturu. Engari ko ētahi e noho ana i ngā pūnaha hauropi kua raweketia e te tangata, tae atu ki ngā papa whakatipu rākau rāwaho. Ahakoa he rerekē ia whānau, ia puninga, kitea nuitia ai ngā momo e kawea ana i ā rātou mahi i ngā tipu me ngā rākau poto, i te papa tonu rānei. E 20% noa iho ngā momo e mōhiotia ana ngā tipu e piri atu ai rātou. Waihoki, mō te nuinga o ngā momo, kāore e mōhiotia ana ngā āhuatanga tāpu me te koiira o ngā punua. E ai ki ngā taunakitanga ā-waha, ko ētahi o ngā hoariri māori matua o ngā Auchenorrhyncha o Aotearoa, ko ngā wāpu pirinoa, ngā manu, ngā pītara konihi, ngā pūngāwerewere, me ngā pūwereriki. Hui katoa, ko tōna 25% o te rōpū whānui nei he poto ngā parihau, karekau rānei he parihau. Nō reira ehara pea ko te rere tētahi ara e pīrara haere ai ēnei momo.

Kotahi rau, e iwa tekau mā ono ngā momo o Aotearoa kua oti te āta whakaahua ā-kupu. Ko tētahi 13% tēnei o te rahi o ngā momo o Ahitereiria — kei te takiwā o te 1500 ngā momo o reira. I tēnei wā, 15 ngā whānau Auchenorrhyncha kei Ahitereiria kāore e kitea i Aotearoa. E 24 ngā momo rāwaho kei Aotearoa e noho ana — he tata tēnei ki te 12% o ngā momo katoa. Karekau he whānau kotahi ko Aotearoa anake te whenua e noho ai ōna momo katoa, engari katoa ngā peke-rau noho papa (o te whānau Myerslopiidae) nō konei anake, ā, koia tētahi 70% o ngā momo katoa o tēnei rōpū, puta noa i te ao. Ko ngā whānau rahi katoa i Aotearoa, ko ngā peke-rau, a ngā Cicadellidae (e 78 ngā momo, ko tētahi 40% tēnei o te rōpū nui tonu), ngā kihikihi, a ngā Cicadidae (e 34 ngā momo, ko tētahi 17% tēnei), me ngā peke-tipu cixiid, a ngā Cixiidae (e 26 ngā momo, ko tētahi 13%). Heoi anō, kitea nuitia ai ēnei whānau i Ahitereiria anō hoki.

Ko te nuinga o ngā momo e noho ana ki Aotearoa me Ahitereiria, kei ngā wāhi katoa o te ao, ā, i tatū mai pea ki konei i wāhi kē. Ko te nuinga o ngā momo māori kei Aotearoa me ōna kiritata, ka kitea anō i te rāwhiti o Aotearoa, ā, he iti ake ka kitea anō i Tahimania, i te Moutere Norfolk, ā, he torutoru ka kitea anō i te Moutere o Lord Howe me te Whenua Kanaki. Ko Te Uri Māroa pea te pūtakenga mai o ēnei āhuatanga ōrite. Pērā anō i ngā tōpito huhua o te ao, he whānau matahuhua tonu a ngā Cicadellidae (ngā peke-rau), ā, kitea nuitia ai ngā āhuatanga ōrite o roto i tēnei rōpū. Muri iho, ko te whānau Delphacidae (ngā peke-tipu delphacid). E 20 o roto i te 50 (ko tētahi 40%) o ngā puninga o Aotearoa, kei Ahitereiria anō (tae atu ki Tahimania, te Moutere Norfolk, me te Moutere o Lord Howe). Kia heke ki te papanga momo, e 5% tēnei.

E kitea ana i ngā mahere whakaatu i te tītaringa o ngā momo, kua whānui ake te hora o te nuinga o ngā momo i tērā i whakapaetia. Me te hāngai anō o tēnei kōrero ki ngā momo kua rangahautia nuitia. Heoi anō, e 95 pea ngā momo māori (ko tētahi 55% tēnei o ngā momo māori katoa) kei ētahi taupori tekau, iti ake rānei. E tika ana pea kia tirohia ēnei taupori i raro i ngā kaupapa whāomoomo i ngā aitanga pepeke.

He maha ake ngā momo (133) kei Te Waka-a-Māui, ā, e 64 o ēnei kāore e kitea i moutere kē. He paku iti ake (119) ngā momo kei Te Ika-a-Māui, a, e 44 o ēnei kāore e kitea i moutere kē. Kua eke pea ki te 65 ngā rōpū kei Te Ika me Te Waka-a-Māui. Kei ētahi o ngā huinga moutere o waho ētahi momo māori torutoru nei. Ko Wharekauri tērā (12), ko ngā Moutere Kermadec (10), me Manawatāwhi (21). Kāore anō kia kitea he Auchenorrhyncha i ngā moutere ahu atu ki Te Kōpakatanga ki te Tonga (arā, ki ngā Antipodes, ki ngā Moutere o Auckland, o Bounty, te Moutere o Campbell, ki Snares rānei).

Contributor **Marie-Claude Larivière** was born and educated in Québec, graduating with a PhD in systematic entomology from McGill University in 1990. For the following two years she did postdoctoral research at Agriculture Canada, Ottawa. In 1992, Marie-Claude moved to New Zealand to work as a full-time Hemiptera biosystematist with Landcare Research. From 1994 to 1997 she led the Biosystematics of New Zealand Land Invertebrates programme, from 1995 to 2005 the development of New Zealand Arthropod Collection's databasing and digital imaging systems, from 1999 to 2004, the Koiroa-BioAssist™ project (Biodiversity Assessment using Information Technology and Taxonomy), and from 2007 to 2010, the Invertebrate Biosystematics research group (Landcare Research, Auckland). Marie-Claude has been an active member of the *Fauna of New Zealand* series committee (1994–2004, 2007–present). She is the author of over 90 papers and monographs on the taxonomy, distribution and natural history of Hemiptera and Carabidae (Coleoptera), including seven *Fauna of New Zealand* contributions (Hemiptera: Auchenorrhyncha catalogue, Heteroptera catalogue, Cixiidae and Pentatomoidea revisions; Carabidae: taxonomic catalogue; Harpalini revision; synopsis of supraspecific taxa). She has also published on Australian and South Pacific Hemiptera as well as on North and Central American Hemiptera, Orthoptera, and Carabidae. Many of her publications have been written in collaboration with her husband André Larochelle with whom she hopes to soon publish new works on New Zealand Hemiptera and Carabidae. In addition, she conducts international cooperative research and New Zealand-based commercial research for the Crown Research Institute Landcare Research. Marie-Claude has a keen interest in biological information technology, especially digital taxonomy, computer imaging, interactive identification, and web-publishing. She maintains electronic information on Hemiptera on The New Zealand Hemiptera website (<http://hemiptera.landcareresearch.co.nz/>). Since 1992 she has been actively involved in specialised field inventory, surveying Hemiptera in over 1000 localities, to gain a better understanding of the taxonomy, natural history, and biogeography of New Zealand species.

Contributor **Murray Fletcher** was born in Adelaide, South Australia, but received most of his education in Sydney, where he graduated from Sydney University with BSc (Hons) in 1974 and PhD in 1978. Dr John W. Evans was an early mentor and encouraged him to focus on the planthoppers (Fulgoroformia) for both his PhD project and his subsequent life's work. In 1986, Evans passed his extensive reprint collection into Murray's care. Murray had begun work as an insect taxonomist with the then NSW Department of Agriculture (later the NSW Department of Primary Industries) at the Biological and Chemical Research Institute (BCRI) at Rydalmere in Sydney's west in May 1977. Murray's initial focus was on the planthopper family Flatidae and in 1986, he expanded his interests to include the leafhoppers (Auchenorrhyncha: Cicadomorpha) of Australia. He has published more than 80 papers on these groups of insects, many with international collaborators, as well as over 30 electronic publications, particularly identification keys to the fauna of Australian and neighbouring areas on the ASCU website (<http://www1.dpi.nsw.gov.au/keys/>). In 1997, BCRI was closed and the entomological and plant pathology collections and associated staff were relocated to Orange Agricultural Institute in the Central West of New South Wales where they are still located. Murray is now a Principal Research Scientist and Research Leader (Scientific Collections). He is also an Adjunct Professor with Charles Sturt University, Subject Editor (Fulgoroformia) for *Zootaxa* and a member of the Editorial Boards for *Fauna of New Zealand*, *Entomotaxonomia*, *Australian Journal of Entomology*, and *General and Applied*

I te tuawhenua o Aotearoa, ko ngā wāhi e mōhiotia ana kei reira te tino matahuhuatanga, ko Te Tai Tokerau, ko Tāmaki, me Te Upoko-o-te-Ika i Te Ika-a-Māui, ko te rohe uru-mā-raki o Whakatū, ko ngā whenua waenga o Waitaha i Te Waipounamu. Heoi, he maha anō ngā momo rāwaho o Ahitereiria, o hea ake kei aua takiwā. Ki te tohunga koiroa, ko ngā wāhi e tino nui ai ngā momo kāore e kitea i wāhi kē o Aotearoa, o te ao rānei, koia kē ngā wāhi tino whai take hei rangahau. Koinei te āhua ki Te Tai Tokerau, ki Te Upoko-o-te-Ika, i Te Ika-a-Māui, me te rohe uru-mā-raki o Whakatū, a Wairau, te rohe waenga o Waitaha, a Piopiotahi, me Murihiku i Te Waipounamu. Ā, kāore e kore ko Piopiotahi me ōna whenua urutapu kāore anō kia kaha pōkaihia e te tangata, koia tētahi wāhi ka nui atu ōna momo pērā.

Ko ngā rohe kei reira te maha atu o ngā momo rāwaho, ko ngā wāhi āhua mahana ake o Aotearoa, ko ngā tumu waka hokohoko matua, me ngā wāhi ahuhenua nui (ko Tāmaki, ko Te Matau-a-Māui, ko Whakatū, ko Ōtautahi). He maha ngā momo rāwaho e pakari ana ngā parihaui, e āhehi pai ana ki te whakapirara haere. Ko ētahi ka whakawaia e te aho horihori, ā, ko te nuinga, ka urutau pai noa iho ki ngā taiao kua āhua rawekehia, kua kaha tonu rānei te rawekehia.

I whānau mai tētahi o ngā kaituhi, a **Marie-Claude Larivière** i Québec. I reira anō ia e rapu ana i te mātauranga ā, riro noa i a ia tana Tohu Tākututanga mai i te Whare Wānanga o McGill, i te tau 1990. Ko te kaupapa o taua tohu, ko te pūnaha whakarōpū i ngā aitanga a Punga. Kātahi ia ka neke ki Agriculture Canada, i Ottawa, mō te rua tau, ki reira whātoro ai i ētahi atu rangahautanga. Nō te tau 1992, ka neke mai a Marie-Claude ki Aotearoa, ka mahi hei kaitātai i ngā whakapapa o ngāi Hemiptera mā Manaaki Whenua. Mai i te 1994 ki te 1997, nāna i ārahi te Tātaitanga o ngā Whakapapa o ngā Aitanga Tuarā-Kore a Tāne, te hanganga o ngā pūnaha pātengi raraunga, whakaahua ā-mati mō te Kohinga Angawaho o Aotearoa, ā, mai i te tau 1994 ki te 2004, ko te kaupapa Koiroa-BioAssist™ (Te Aromatawai i te Huhuatanga Koiroa i runga i te Whakamahi i te Hangarau Mōhiotia me te Whakarōpūtanga). Mai i te Hōngongoi 2007 ki te 2010, ko ia anō te kaiārahi o te rōpū rangahau i te Tātaitanga o ngā Whakapapa o ngā Hanga Tuarā-Kore (i Manaaki Whenua, Tāmaki). Me kōrero anō te wāhi ki a ia i te komiti whakataki i te hautaka *Ko te Aitanga Pepeke o Aotearoa* (1994–2004, 2007–nāianei). He neke atu i te 90 ngā tuhinga kua oti i a ia e pā ana ki te whakarōpūtanga, te tītaringa, me ngā hītori māori o ngāi Hemiptera me Carabidae (Coleoptera), tae atu ki ētahi tānga e 7 mō *Ko te Aitanga Pepeke o Aotearoa* (a Hemiptera — he rārangi Auchenorrhyncha, he rārangi Heteroptera, he whakahoutanga mō ngāi Cixiidae me Pentatomoidea; ngā Carabidae — he rārangi whakarōpū; a Harpalini — he whakahoutanga; he whakarōpūtanga o ngā rōpū o runga ake i te momo). Kua puta anō i a ia he tuhinga mō ngā Hemiptera o Ahitereiria me Te Moana-nui-a-Kiwa, tae atu ki ētahi mō ngāi Hemiptera, ngāi Orthoptera, me ngāi Carabidae i Amerika ki te Raki me Amerika Pū. He maha tonu ana tuhinga kua tuhia ngātāhiti ki tana hoa tāne, ki a André Larochelle, ā, ko tana tūmanako, taihoa ka whakaputaina e rāua ētahi kōrero hou mō ngā Hemiptera me ngā Carabidae o Aotearoa. Āpiti atu ki tērā, kei te whakahaere ia i ētahi rangahautanga mahi tahi ki ētahi atu kaimātai pepeke o te ao, ko ia anō tērā ki te ārahi i ētahi rangahau arumoni i Aotearoa mā Manaaki Whenua. Tērā anō tētahi tino kaupapa e whāia ana e Marie-Claude, ko te hangarau pārongo koiroa, tae atu ki te whakarōpū ā-mati, te hanga whakaahua ki te rorohiko, te tautohu pāhekoheko, me te whakaputa kōrero ki te pae tukutuku. Ko ia kei te tiaki i ngā kōrero rorohiko mō ngāi Hemiptera i te pae tukutuku mō ngā Hemiptera o Aotearoa (<http://hemiptera.landcareresearch.co.nz/>). Mai i te tau 1992, kua

Entomology. He is chair of the Standing Committee for International Auchenorrhyncha Congresses and editor of the *Tymbal* Auchenorrhyncha website. From 2004–2008 he was Vice President and Chairman of the Executive of the Australian Entomological Society and continues on the Society's Council as Regional Councillor for rural NSW. He has supervised or co-supervised numerous postgraduate projects and is currently supervising three PhD projects, two of which are being undertaken by students at the North West Agriculture and Forestry University, Yangling, China.

Contributor **André Larochelle** was born and educated in Québec, graduating in 1974 with a Brevet d'Enseignement spécialisé from the Université du Québec à Montréal. He taught ecology at the Collège Bourget, Rigaud, Québec, until 1990. With the encouragement of the late carabid specialist Carl H. Lindroth, André very quickly became interested in the study of ground-beetles. From 1975 to 1979 he was the co-editor of two entomological journals, *Cordulia* and *Bulletin d'inventaire des insectes du Québec*. From 1986 to 1992, he was honorary curator to the Lyman Entomological Museum and Research Laboratory, McGill University, Québec. In 1992, André moved to New Zealand to work as a research scientist. Currently, he is a Research Associate with the New Zealand Arthropod Collection, Landcare Research, Auckland. André has written over 400 papers on the distribution, ecology, biology, and dispersal power of North American carabids and other insects (including two handbooks on the Heteroptera of Québec). In 1990 he published "The food of carabid beetles of the world"; in 1993, with Yves Bousquet, he co-authored a "Catalogue of Carabidae of America North of Mexico"; and in 2001 and 2003, with his wife Marie-Claude, he published a "Natural History of the tiger beetles of North America North of Mexico" and "A Natural History of Carabidae" for the same region. His current main research interests are the faunistics and taxonomy of New Zealand ground-beetles on which he has co-authored three *Fauna of New Zealand* contributions (Catalogue of Carabidae, 2001; Revision of tribe Harpalini, 2005; Synopsis of supraspecific taxa, 2007). André is a keen provider of electronic information on ground-beetles on the internet via The New Zealand Carabidae website (<http://carabidae.landcareresearch.co.nz/>). Since 1992, he has been actively involved in specialised field inventory, surveying carabids in over 1000 localities, to gain a better understanding of the taxonomy, natural history, and biogeography of New Zealand species.

Birgit E. Rhode was born and educated in Germany where she graduated with a PhD in marine biology from the University of Hamburg in 1987. Between 1980 and 1993 she worked in estuarine and coastal marine ecology (Institute of Hydrology, Island of Norderney, North Sea), studied the developmental morphology of polychaete sense organs, and lectured in general zoology and marine biology (Zoological Institute, Free University of Berlin). In 1993, Birgit moved to New Zealand. Always open to new challenges, she abandoned the marine environment and moved on to drier grounds becoming a Research Assistant to Marie-Claude Larivière's work on New Zealand Hemiptera. Birgit has always been fascinated with photography and structural details, so it was almost inevitable that with the introduction of digital imaging into the research environment she became more and more involved in imaging and graphics work. She is now fulfilling most of the imaging requirements of entomological systematists at Landcare Research.

whakapau kaha ia ki te puta ā-tinana atu ki te taiao ki te āta tiroiro i ngā Hemiptera i ngā takiwā 1000 neke atu, e mārama ake ai ngā whakarōpūtanga, ngā hitori māori, me te papawhenua-koiara o ngā momo o Aotearoa.

I whānau mai te kaituhi nei, a **Murray Fletcher**, ki Atareta, i Ahitereiria ki te Tonga, engari i kuraina ki Poihākēna. He mea whakawhiwhi ia e te Whare Wānanga o Poihākēna ki tana Tohu Pūtaiao (Hōnore) i te tau 1974, ā, ki tana Tohu Kairangi i te tau 1978. Ka poipoia ia e Tākuta John W. Evans, nāna a Murray i akiaki kia arotahi ki ngā peke-tipu (a ngāi Fulgoromorpha) mō tana Tohu Kairangi, ā haere ake. I te tau 1986, ka tukuna e Evans tana kohinga tāruatanga nui tonu hei tiaki mā Murray. Kua tūmata kē a Murray i tana mahi whakarōpū pepeke i te Tari o NSW i tērā wā (nō muri mai ka riro ko te Tari Ahumahi Mātāmua o NSW te ingoa) i te Pūtahi Rangahau Koiara, Matū (BCRI) i Rydalmere, rohe o Poihākēna ki te uru, i te Haratua o te tau 1977. Ko tana aronga i te tīmatanga, ko te whānau peke-tipu Flatidae. Nō te tau 1986, ka pere atu anō te titiro ki ngā peke-rau (Auchenorrhyncha: Cicadomorpha) o Ahitereiria. He nui ake i te 80 ngā kōrero kua tāia e ia mō ēnei huinga pepeke, ko ētahi i mahia tahitiki ki ngā tohunga o tāwāhi, ā, he neke atu i te 30 ngā tānga ā-rohohiko, ko te maha atu o ēnei he ara tautohu mō ngā pepeke o Ahitereiria me ngā moutere piripitā, ki te pae tukutuku ASCU (<http://www1.dpi.nsw.gov.au/keys/>). I te tau 1997, ka kati te BCRI, ka nekehia ngā kohinga mātai pepeke, mātai mate tipu, me ōna anō kaimahi, ki te Pūtahi Ahuwhenua Ārani i te Pokapū-mā-Uru o Niu Taute Wēra. He Kaipūtaiao Rangahau Matua, he Kaiārahi Rangahau (Kohinga Pūtaiao) a Murray iāianā. Ko ia anō tētahi Ahorangi Turuki i te Whare Wānanga o Charles Sturt, he ġtita Kaupapa (Fulgoromorpha) mā *Zootaxa*, he mema anō nō ngā Poari Āhuatanga ġtita mō *Ko te Aitanga a Pepeke*, te *Entomotaxonomia*, te *Australian Journal of Entomology* me te *General and Applied Entomology*. Ko ia te tumuaki o te Komiti Tū mō ngā Hui Auchenorrhyncha o te Ao, me te ētita o te pae tukutuku mō ngā Auchenorrhyncha *Tymbal*. I ngā tau 2004–2008, ko ia te Perehitene Tuarua me te Tumuaiki o te Komiti Whāiti o te Kāhui Mātai Pepeke o Ahitereiria, ā, e noho tonu nei ia ki te Kaunihera a te Kāhui hei Pou Kaunihera ā-Rohe mō te taiwhenua o Niu Taute Wēra. E hia kē ngā kaupapa paerua ko ia i te kaiārahi; i tēnei wā e toru ngā kaupapa tohu kairangi e arahina ana e ia. E rua o ēnei e whakahaeretia ana e ētahi ākonga i te Whare Wānanga Ahuwhenua, Ono Rākau ki te Uru-mā-Raki, i Yangling, Haina.

I whānau mai tērā atu kaituhi, a **André Larochelle**, i Québec. I reira ia e kura ana, ā, nō te tau 1974 ka whakawhiwhia ki tana tohu Brevet d'Enseignement spécialisé, mai i te Whare Wānanga o Québec ki Montréal. Taka mai ki te tau 1990, e whakaako ana ia i te mātai hauropi i te Kura Bourget, i Rigaud, Québec. Kāore i roa e whakaako ana, ka tupu tana hiahia ki te rangahau pīrāra noho papa, me te poipoia anō a tērā tohunga carabid kua riro nei i te tirohanga kanohi, a Carl H. Lindroth, i tēnei whakaaro ōna. Mai i te 1975 ki te 1979 ko ia tētahi o ngā ētita o ētahi hautaka mātai pepeke, arā, o *Cordulia* me te *Bulletin d'inventaire des insectes du Québec*. Mai i te 1986 ki te 1992, ko ia te kaitiaki hōnore o te Whare Rokiroki, Rangahau Pepeke o Lyman, i te Whare Wānanga o McGill, i Québec. I te tau 1992, ka neke mai a André ki Aotearoa, ka mahi hei kaipūtaiao rangahau. I tēnei wā, he Kairangahau ia i te Kohinga Angawaho o Aotearoa i Manaaki Whenua, Tāmaki-makau-rau. He nui ake i te 400 ngā kōrero kua tuhia e André mō te tītaringa, ngā āhuatanga hauropi, te koiara, me te kaha whakapirara o ngā carabid me ētahi atu aitanga pepeke o Amerika ki te Raki (tae atu ki ētahi pukapuka ringa mō ngā Heteroptera o Québec). I te tau 1990, ka

(haere tonu)

Marie-Claude Larivière



Murray Fletcher



André Larochelle



whakaputaina e ia “Ngā kai a ngā pītara carabid o te ao”; i te tau 1993, ko rāua ko Yves Bousquet ngā kaituhi i te “Rārangi o ngā Carabidae o Amerika ki te Raki o Mēhiko”; i te tau 2001 me te 2003, nā rāua ko tana wahine, a Marie-Claude, i whakaputa ngā “Hītori Māori o ngā tātake o Amerika ki te Raki, ki te Raki o Mēhiko” me ngā “Hītori Māori o ngāi Carabidae”, mō taua rohe anō. Ko te aronga matua o ana mahi rangahau i ēnei rā, ko te āhua me te whakarōpūtanga o te whānau pītara noho papa o Aotearoa. E toru ngā tuhinga *Ko te Aitanga Pepeke o Aotearoa* ko ia tētahi o ngā kaituhi (ko te Rārangi o ngāi Carabidae, 2001; he whakahoutanga o te iwi Harpalini, 2005; he whakarāpopototanga o ngā rōpū o runga ake i te momo). He kaha ia ki te uta kōrero atu e pā ana ki ngā pītara noho papa ki te ipurangi, mā te pae tukutuku mō ngā Carabidae o Aotearoa (<http://carabidae.landcareresearch.co.nz/>). Mai i te tau 1992, kua whakapau kaha ia ki te puta ā-tinana atu ki te taiao ki te āta tiroiro i ngā carabid i ngā takiwā 1000 neke atu, e mārāma ake ai ngā whakarōpūtanga, ngā hītori māori, me te papawhenua-koiora o ngā momo o Aotearoa.

Ko Tiamana te ūkaipō o **Birgit E. Rhode**, i kuraina anō ia ki reira. Nō te tau 1987 ka whakawhiwhia ia ki tana Tohu Tākutatanga koiora moana e te Whare Wānanga o Hamburg. Mai i te tau 1980 ki te 1993, ko ngā pūnaha haupopi o te wahapū me te takutai ētahi kaupapa i āta tirohia e ia (i te Pūtahi Mātai i ngā Wai o Papatūānuku, Moutere o Norderney, Moana Raki), ka tirohia anō te hanga o ngā wāhanga rongo o ngā noke polychaete, ā, he pūkenga anō ia mō te mātauranga kararehe whānui me te koiora moana (i te Pūtahi Mātauranga Kararehe, te Whare Wānanga Utu-kore o Berlin). I te tau 1993 ka neke mai a Birgit ki Aotearoa. He rawe ki te wahine nei ngā mātātaki hou. Whakarērea atu ana ngā mahi ki tai, tahuri mai ana ki uta, me te noho hei Kaiāwhina Rangahau mā Marie-Claude Larivière i āna mahi tiroiro i ngā Hemiptera o Aotearoa. He tino kaupapa pārekareka ki a ia te tango whakaahua me te hanga o ngā mea ora ā, i te urunga mai o ngā whakaahua ā-mati ki te ao rangahau, ka kaha ake tana whakapau kaha ki te tārai whakaahua me ngā mahi whakairoiro. Ināianei, ko ia kei te whakaea i te nuinga o ngā tono tārai whakaahua a ngā kaitātai whakapapa pepeke a Manaaki Whenua.

Birgit Rhode



Translation by **H. Jacob**

Ōtaki



Frontispiece *Amphipsalta zelandica* (Boisduval) (Photograph: B. E. Rhode)

Dedication

"A recent catalogue of any kind, so long as it is reasonably complete on any particular side, is a gift of the gods." G.W. Kirkaldy, 1907, *Annales de la Société Entomologique de Belgique* 51: 303.

It would have been impossible to catalogue the New Zealand Auchenorrhyncha so comprehensively without the work of many researchers and collectors who studied the fauna before us. We take great pleasure in dedicating this work to two people in particular, William (Bill) Knight (formerly curator of Hemiptera, Natural History Museum, London) and the late John W. Evans (formerly Director of the Australian Museum, Sydney). The task of writing the catalogue would have been much more difficult without their previous efforts at revising the Auchenorrhyncha of New Zealand and Australia.

ABSTRACT

Auchenorrhyncha are a highly diverse group of hemimetabolous insects and a major component of the phytophagous insect fauna in most terrestrial ecosystems worldwide. They are treated here as a suborder of the Hemiptera and include the planthoppers (infraorder Fulgoromorpha), cicadas, froghoppers, spittlebugs, treehoppers, and leafhoppers (infraorder Cicadomorpha). With their piercing sucking mouthparts the majority of Auchenorrhyncha species feed on phloem or xylem (plant sap) or plant cell contents (parenchyma or cell ruptures) although some species feed on mosses or fungi. This economically important group includes several plant pests and several vectors of plant pathogens, including phytoplasmas, viruses, and bacteria.

Auchenorrhyncha have been collected extensively and are well represented in New Zealand entomological museums and collections. Despite this, no up-to-date catalogue has been published since Wise's (1977) "... *synonymic checklist of the Hexapoda of the New Zealand sub-region* ..." which enumerated 64 genera and 160 species in 11 families. Numerous nomenclatural changes and new taxa have been published since then, and the fauna now totals 68 genera and 196 species in 12 families.

In this biosystematics catalogue, the species-group names of all New Zealand Cicadomorpha and Fulgoromorpha are catalogued with distribution records and information on biology and wing condition (as indicative of flight ability). Valid names are listed in their current and original combinations with the author(s), publication date, page citation, type status, type repository, type locality, and biostatus. Synonyms are given in their original combinations. Other existing combinations are provided. Genus-group names are listed with the author(s), publication date, page citation, type species (including method of fixation), and biostatus. The catalogue is arranged alphabetically by infraorders, superfamilies, families, subfamilies, tribes, genus-group, and species-group names. Under each species, the geographic distribution, biology, and wing condition are given. Selected references dealing with taxonomy (including keys and revisions), distribution, biology, and dispersal power are also provided where appropriate.

The catalogue also includes a bibliography of over 500 references (including original taxonomic descriptions), colour photographs of 133 primary types deposited in New Zealand collections (covering about 68% of all described taxa), 207 maps showing species and subspecies distributions, four maps showing patterns of taxonomic diversity and species endemism, and a full taxonomic index. Finally, 8 appendices are provided: glossary, list of approximately 300 plants associated with Auchenorrhyncha, acronyms of entomological collections and museums, list of taxa incorrectly recorded or doubtfully established in New Zealand, geographical coordinates of over 380 collecting localities, alphabetical lists of valid taxa by areas of New Zealand, type localities of valid species described from New Zealand, and a list of about 95 taxa with limited distribution and which are of potential conservation importance. This catalogue brings together the available literature and collection-based information on New Zealand Fulgoromorpha and Cicadomorpha for use by biosystematists, identifiers, biosecurity and conservation managers, ecologists and other biologists, as well as members of the public.

The composition of the New Zealand auchenorrhynchan fauna and its affinities with Australia, Lord Howe Island, Norfolk Island, and New Caledonia are analysed and discussed. It is estimated that, once fully described, the fauna could total 300–350 species. Endemism is high with 81% of species and 41% of genera

currently recognised as being endemic; New Zealand is regarded as a biodiversity “hot spot”. The fauna shows greatest affinity to that of eastern continental Australia. Twenty-four (24) adventive (introduced) taxa occur in New Zealand, including some economically important species, e.g., *Philaenus spumarius* (Linnaeus, 1758), Aphrophoridae; *Anzygina dumbletoni* (Ghuri, 1963), *Edwardsiana froggatti* (Baker, 1925), *Eupteryx melissae* Curtis, 1837, *Orosius argentatus* (Evans, 1938), *Ribautiana tenerrima* (Herrich-Schäffer, 1834), *Rhytidodus decimaquartus* (Schrank, 1776), Cicadellidae; *Anzora unicolor* (Walker, 1862), Flatidae; *Scolypopa australis* (Walker, 1851), Ricaniidae.

The following new combinations are made: *Arawa negata* (White, 1879) for *Athysanus negatus* White, 1879, *Nesoclutha phryne* (Kirkaldy, 1907) for *Nesoclutha pallida* (Evans, 1942) (Cicadellidae); *Cermada inexpectata* (Larivière, 1999) for *Cixius inexpectatus* Larivière, 1999, *Cermada triregia* (Larivière, 1999) for *Cixius triregius* Larivière, 1999 (Cixiidae). *Arawa salubris* Knight, 1975 is synonymised with *Arawa negata* (White, 1879). The following Cicadellidae taxa have been incorrectly recorded or doubtfully established in New Zealand: *Alodeltocephalus obliquus* (Evans, 1938), *Balclutha rieki* Knight, 1987, *Edwardsiana crataegi* (Douglas, 1876), *Japananus hyalinus* (Osborn, 1900), *Limotettix incertus* Evans, 1966, *Paracephaleus montanus* (Evans, 1942). The cicadellid genus *Athysanus* Burmeister, 1838, is excluded from the fauna.

The areas of New Zealand showing the highest taxonomic diversity are: North Island – Wellington (73 species-group taxa), Auckland (64), Northland (60); South Island – Northwest Nelson (65), Mid Canterbury (56). The areas displaying the highest number of New Zealand endemics are: North Island – Wellington (63 species-group taxa), Northland (47), Taupo (46), Auckland (45), Bay of Plenty (40); South Island – Northwest Nelson (50), Buller (45), Mid Canterbury (40). The areas known for the highest number of local endemics are: North Island – Northland (5), Wellington (5); South Island – Northwest Nelson (4).

New Zealand Auchenorrhyncha are generally diurnal and live in lowland to mountain forests and shrublands, although a number of groups are found typically in open habitats such as tussock grasslands and in subalpine environments. Indigenous species usually live within the confines of their natural habitats but some species also live in modified ecosystems and exotic tree plantations. Depending on families and genera, species can be predominantly planticolous, arboreal, or even epigeal. The hostplants are known with certainty for less than 20% of taxa. The taxonomy and biology of immature stages are largely unknown for the majority of taxa. Anecdotal evidence suggests that parasitic wasps, birds, predatory beetles, spiders, and mites may be among the major natural enemies of New Zealand Auchenorrhyncha. Overall, about 25% of the fauna is either brachypterous or micropterous. Active dispersal by flight is unlikely for the majority of New Zealand species.

Keywords. Hemiptera, Auchenorrhyncha, Cicadomorpha, Fulgoromorpha, New Zealand, catalogue, classification, distribution, biology, species endemism, fauna.

Larivière, M.-C.; Fletcher, M. J.; Larochelle, A. 2010. Auchenorrhyncha (Insecta: Hemiptera): catalogue. *Fauna of New Zealand* 63, 232 pp.

Received: 1 July 2009, Accepted: 19 October 2009.

CONTENTS

Checklist of taxa	13
Acknowledgments	18
Introduction [and associated tables]	19
Methods and conventions	32
Catalogue	34
Bibliography	104
Appendices	122
Appendix A. Glossary	122
Appendix B. Plants associated with Auchenorrhyncha in New Zealand	124
Appendix C. Acronyms of entomological collections and museums	130
Appendix D. Alphabetical list of taxa incorrectly recorded or doubtfully established in New Zealand	130
Appendix E. Geographical coordinates of main localities	132
Appendix F. Alphabetical list of valid taxa by areas of New Zealand	136
Appendix G. Type localities of valid Auchenorrhyncha taxa from New Zealand	145
Appendix H. Endemic species currently known from ten populations or fewer	148
Colour photographs of primary types	149
Maps	192
Map 1. The New Zealand subregion with area codes	192
Map 2. Area codes and collecting localities from mainland New Zealand, North Island	193
Map 3. Area codes and collecting localities from mainland New Zealand, South Island and Stewart Island	194
Map 4. Total number of known species-group taxa by areas	195
Map 5. Number of known New Zealand endemic species-group taxa by areas	196
Map 6. Number of endemic species-group taxa known to be restricted to single areas	197
Map 7. Number of known adventive species-group taxa by areas.	198
Species distribution maps	199
Taxonomic index	222

CHECKLIST OF TAXA

Notes. Taxa are arranged alphabetically. Synonyms of adventive taxa (A) from outside the Australian Region, are not included. A = adventive; E = endemic; N = native but not endemic to New Zealand.

Order HEMIPTERA

Suborder AUCHENORRHYNCHA

Infraorder CICADOMORPHA	34
Superfamily CERCOPOIDEA	34
Family APHROPHORIDAE	34
Genus <i>Basilioterpa</i> Hamilton & Morales, 1992 ^N	35
<i>bullata</i> Hamilton & Morales, 1992 ^E	35
Genus <i>Bathyllus</i> Stål, 1866 ^A	35
<i>albicinctus</i> (Erichson, 1842) ^A	35
<i>convexa</i> Walker, 1851, <i>Lepyronia</i>	
<i>moerens</i> Stål, 1854, <i>Lepyronia</i>	
<i>albigutta</i> Walker, 1858, <i>Lepyronia</i>	
Genus <i>Carystoterpa</i> Lallemand, 1936 ^N	35
<i>aurata</i> Hamilton & Morales, 1992 ^E	35
<i>chelyon</i> Hamilton & Morales, 1992 ^E	36
<i>fungens</i> (Walker, 1851) ^E	36
<i>ikana</i> Hamilton & Morales, 1992 ^E	36
<i>maori</i> Hamilton & Morales, 1992 ^E	36
<i>minima</i> Hamilton & Morales, 1992 ^E	36
<i>minor</i> Hamilton & Morales, 1992 ^E	37
<i>subtacta</i> (Walker, 1858) ^E	37
<i>subvirescens</i> (Butler, 1874) ^E	37
<i>trimaculata</i> (Butler, 1874) ^E	37
<i>tristis</i> (Alfken, 1904) ^E	37
<i>trimaculatus laetus</i> Alfken, <i>Ptyelus</i>	
<i>vagans</i> Hamilton & Morales, 1992 ^E	38
Genus <i>Philaenus</i> Stål, 1864 ^A	38
<i>spumarius</i> (Linnaeus, 1758) ^A	38
Genus <i>Pseudaphronella</i> Evans, 1966 ^E	38
<i>jactator</i> (White, 1879) ^E	39
Superfamily CICADOIDEA	39
Family CICADIDAE	39
Subfamily CICADETTINAE	40
Tribe CICADETTINI	40
Genus <i>Amphipsalta</i> Fleming, 1969 ^E	40
<i>cingulata</i> (Fabricius, 1775) ^E	40
<i>strepitans</i> (Kirkaldy, 1909) ^E	40
<i>cingulata</i> var. <i>obscura</i> Hudson, 1891, <i>Cicada</i> .	
Preoccupied.	
<i>zelandica</i> (Boisduval, 1835) ^E	41

Genus <i>Kikihia</i> Dugdale, 1972 ^N	41	<i>cincta</i> Walker, 1850, <i>Cicada</i>	
<i>angusta</i> (Walker, 1850) ^E	41	<i>muta</i> var. <i>minor</i> Hudson, 1891, <i>Cicada</i>	
<i>cauta</i> (Myers, 1921) ^E	42	<i>leptomera</i> (Myers, 1921) ^E	54
<i>cutora cumberi</i> Fleming, 1973 ^E	42	<i>microdora</i> (Hudson, 1936) ^E	55
<i>cutora cutora</i> (Walker, 1850) ^E	42		
<i>cutora exulis</i> (Hudson, 1950) ^E	43	Superfamily MEMBRACOIDEA	55
<i>dugdalei</i> Fleming, 1984 ^E	43	Family CICADELLIDAE	55
<i>horologium</i> Fleming, 1984 ^E	43	Subfamily DELTOCEPHALINAE	55
<i>muta</i> var. <i>flavescens</i> Hudson, 1891, <i>Cicada</i> .		Tribe ATHYSANINI	55
Preoccupied.		Genus <i>Arahura</i> Knight, 1975 ^E	55
<i>laneorum</i> Fleming, 1984 ^E	44	<i>dentata</i> Knight, 1975 ^E	56
<i>longula</i> (Hudson, 1950) ^E	44	<i>gourlayi</i> Knight, 1975 ^E	56
<i>muta muta</i> (Fabricius, 1775) ^E	44	<i>reticulata</i> Knight, 1975 ^E	56
<i>bilinea</i> Walker, 1858, <i>Cicada</i>		Genus <i>Arawa</i> Knight, 1975 ^N	56
<i>fuliginosa</i> Myers, 1921, <i>Melampsalta</i>		<i>dugdalei</i> Knight, 1975 ^E	56
<i>muta pallida</i> (Hudson, 1950) ^E	45	<i>negata</i> (White, 1879) ^E new combination	56
<i>ochrina</i> (Walker, 1858) ^E	45	<i>salubris</i> Knight, 1975 new synonym	
<i>aprilina</i> Hudson, 1891, <i>Cicada</i>		<i>novella</i> (Metcalf, 1967) ^N	57
<i>paxillulæ</i> Fleming, 1984 ^E	46	<i>montanus</i> Evans, 1938, <i>Deltocephalus</i> .	
<i>rosea</i> (Walker, 1850) ^E	46	Preoccupied.	
<i>muta</i> var. <i>cinerescens</i> Hudson, 1891, <i>Cicada</i>		<i>pulchra</i> Knight, 1975 ^N	57
<i>scutellaris</i> (Walker, 1850) ^E	46	<i>variegata</i> Knight, 1975 ^E	57
<i>tristis</i> Hudson, 1891, <i>Cicada</i>		Genus <i>Exitianus</i> Ball, 1929 ^N	58
<i>subalpina</i> (Hudson, 1891) ^E	47	<i>Mimodrylix</i> Zachvatkin, 1935	
<i>muta</i> var. <i>rufescens</i> Hudson, 1891, <i>Cicada</i>		<i>plebeius</i> (Kirkaldy, 1906) ^N	58
<i>muta</i> var. <i>callista</i> Hudson, 1950, <i>Melampsalta</i>		<i>norrisi</i> Evans, 1938, <i>Eutettix</i>	
Genus <i>Maoricicada</i> Dugdale, 1972 ^E	47	<i>transversus</i> Metcalf, 1946, <i>Euscelis</i>	
<i>alticola</i> Dugdale & Fleming, 1978 ^E	47	Genus <i>Limotettix</i> Sahlberg, 1871 ^N	58
<i>campbelli</i> (Myers, 1923) ^E	48	<i>Drylix</i> Edwards, 1922	
<i>maorica</i> Myers, 1923, <i>Pauropsalta</i>		<i>awae</i> (Myers, 1924) ^E	58
<i>cassiope</i> (Hudson, 1891) ^E	48	<i>harrisi</i> Knight, 1975 ^E	59
<i>clamitans</i> Dugdale & Fleming, 1978 ^E	48	<i>pallidus</i> Knight, 1975 ^E	59
<i>hamiltoni</i> (Myers, 1926) ^E	49	<i>pullatus</i> (Evans, 1942) ^N	59
<i>iolanthe</i> (Hudson, 1891) ^E	49	<i>condylus</i> Knight, 1975	
<i>lindsayi</i> (Myers, 1923) ^E	49	Genus <i>Scaphetus</i> Evans, 1966 ^E	59
<i>mangu celer</i> Dugdale & Fleming, 1978 ^E	50	<i>brunneus</i> Evans, 1966 ^E	59
<i>mangu gourlayi</i> Dugdale & Fleming, 1978 ^E	50	<i>simus</i> Knight, 1975 ^E	59
<i>mangu mangu</i> (White, 1879) ^E	50		
<i>mangu multicostata</i> Dugdale & Fleming, 1978 ^E	50	Tribe DELTOCEPHALINI	60
<i>myersi</i> (Fleming, 1971) ^E	51	Genus <i>Horouta</i> Knight, 1975 ^N	60
<i>nigra frigida</i> Dugdale & Fleming, 1978 ^E	51	<i>inconstans</i> Knight, 1975 ^E	60
<i>nigra nigra</i> (Myers, 1921) ^E	51	Genus <i>Maiestas</i> Distant, 1917 ^N	60
<i>oromelaena</i> (Myers, 1926) ^E	52	<i>Togacephalus</i> Matsumura, 1940	
<i>otagoensis maceweni</i> Dugdale & Fleming, 1978 ^E	52	<i>Inazuma</i> Ishihara, 1953	
<i>otagoensis otagoensis</i> Dugdale & Fleming, 1978 ^E	52	<i>Inemadara</i> Ishihara, 1953	
<i>phaeoptera</i> Dugdale & Fleming, 1978 ^E	52	<i>Insulanus</i> Linnavuori, 1960	
<i>tenuis</i> Dugdale & Fleming, 1978 ^E	53	<i>knighiti</i> Webb & Viraktamath, 2009 ^N	60
Genus <i>Notopsalta</i> Dugdale, 1972 ^N	53	<i>samuelsoni</i> (Knight, 1976) ^N	61
<i>sericea</i> (Walker, 1850) ^E	53	<i>vetus</i> (Knight, 1975) ^N	61
<i>nervosa</i> Walker, 1850, <i>Cicada</i>			
<i>indistincta</i> Myers, 1921, <i>Melampsalta</i>			
Genus <i>Rhodopsalta</i> Dugdale, 1972 ^E	53		
<i>cruentata</i> (Fabricius, 1775) ^E	54		

Tribe MACROSTELINI	61	<i>angustatus</i> (Osborn, 1934) ^{N?}	67
Genus <i>Balclutha</i> Kirkaldy, 1900 ^{A?}	61	<i>punctatus</i> Evans, 1940, <i>Eurinoscopus</i>	
<i>incisa</i> (Matsumura, 1902) ^A	62	Subfamily IDIOCERINAE	67
<i>lucida</i> (Butler, 1877) ^{A?}	62	Genus <i>Idiocerus</i> Lewis, 1834 ^A	67
<i>viridinervis</i> Matsumura, 1914 ^{A?}	62	<i>distinguendus</i> Kirschbaum, 1868 ^A	67
Genus <i>Macrosteles</i> Fieber, 1866 ^A	62	Genus <i>Rhytidodus</i> Fieber, 1872 ^A	68
<i>feberi</i> (Edwards, 1889) ^A	62	<i>decimaquartus</i> (Schrank, 1776) ^A	68
Genus <i>Nesoclutha</i> Evans, 1947 ^N	63	Subfamily MACROPSINAE	68
<i>Irunula</i> Ribaut, 1948		Genus <i>Zelopsis</i> Evans, 1966 ^E	68
<i>phryne</i> (Kirkaldy, 1907) ^N new combination	63	<i>nothofagi</i> Evans, 1966 ^E	68
<i>pallidus</i> Evans, 1942, <i>Eusceloscopus</i>		Subfamily TARTESSINAE	68
<i>obscura</i> Evans, 1947, <i>Nesoclutha</i>		Tribe THYMBRINI	68
Tribe OPSIINI	63	Genus <i>Novothybris</i> Evans, 1941 ^E	69
Genus <i>Orosius</i> Distant, 1918 ^A	63	<i>cassiniae</i> (Myers, 1923) ^E	69
<i>Nesaloha</i> Oman, 1943		<i>castor</i> Knight, 1974 ^E	69
<i>argentatus</i> (Evans, 1938) ^A	64	<i>cithara</i> Knight, 1974 ^E	69
Subfamily EUACANTHELLINAE	64	<i>extremitatis</i> Knight, 1974 ^E	69
Tribe EUACANTHELLINI	64	<i>eylesi</i> Knight, 1974 ^E	69
Genus <i>Euacanthella</i> Evans, 1938 ^A	64	<i>hinemoa</i> (Myers, 1923) ^E	70
<i>palustris</i> Evans, 1938 ^A	64	<i>dunensis</i> Myers, 1923, <i>Diedrocephala</i>	
<i>insularis</i> Evans, 1938		<i>maorica</i> (Myers, 1923) ^E	70
<i>brunnea</i> Evans, 1966		<i>hudsonica</i> Myers, 1923, <i>Diedrocephala</i>	
Subfamily EUPELICINAE	65	<i>notata</i> Knight, 1974 ^E	70
Tribe PARADORYDIINI	65	<i>notialis</i> Knight, 1974 ^E	70
Genus <i>Paradorydium</i> Kirkaldy, 1901 ^N	65	<i>peregrina</i> Knight, 1974 ^E	70
<i>Dorydium</i> Burmeister, 1838. Preoccupied.		<i>pollux</i> Knight, 1974 ^E	71
<i>Carphosoma</i> Royer, 1907. Unnecessary replacement		<i>punctata</i> Knight, 1974 ^E	71
name.		<i>solitaria</i> Knight, 1974 ^E	71
<i>Deltodorydium</i> Kirkaldy, 1907		<i>tararua</i> (Myers, 1923) ^E	71
<i>aculeatum</i> Knight, 1973 ^E	65	<i>vagans</i> Knight, 1974 ^E	71
<i>cuspis</i> Knight, 1973 ^E	65	<i>zealandica</i> (Myers, 1923) ^E	71
<i>gourlayi</i> Evans, 1966 ^E	65	Subfamily TYPHLOCYBINAE	72
<i>insulare</i> Evans, 1966 ^E	65	Tribe EMPOASCINI	72
<i>philpotti</i> Myers, 1923 ^E	66	Genus <i>Kybos</i> Fieber, 1866 ^A	72
<i>stewartensis</i> Evans, 1966		<i>lindbergi</i> (Linnavuori, 1951) ^A	72
<i>sertum</i> Knight, 1973 ^E	66	<i>smaragdula</i> (Fallén, 1806) ^A	72
<i>watti</i> Knight, 1973 ^E	66	Genus <i>Matatua</i> Knight, 1976 ^E	72
<i>westwoodi</i> (White, 1879) ^E	66	<i>maorica</i> (Myers, 1923) ^E	72
Subfamily IASSINAE	66	<i>montivaga</i> Knight, 1976 ^E	72
Tribe IASSINI	66	Tribe ERYTHRONEURINI	73
Genus <i>Batracomorphus</i> Lewis, 1834 ^N	66	Genus <i>Anzygina</i> Fletcher & Larivière, 2009 ^N	73
<i>Eurinoscopus</i> Kirkaldy, 1906		<i>agni</i> (Knight, 1976) ^A	73
<i>Ossana</i> Distant, 1914		<i>barrattae</i> Fletcher & Larivière, 2009 ^E	73
<i>Acojassus</i> Evans, 1972		<i>dumbletoni</i> (Ghuri, 1963) ^{A?}	73
<i>Edijassus</i> Evans, 1972		<i>ramsayi</i> (Knight, 1976) ^E	74
<i>adventitosus</i> Evans, 1966 ^N	67	<i>toetoe</i> (Cumber, 1952) ^E	74
		<i>zealandica</i> (Myers, 1923) ^N	74

<i>kiekie</i> Myers, 1923, <i>Erythroneura</i>	<i>rakiuraensis</i> Szwedo, 2004 ^E	81
<i>cyathea</i> Myers, 1923, <i>Erythroneura</i>	<i>tawhai</i> Szwedo, 2004 ^E	81
<i>ansonae</i> Myers, 1923, <i>Erythroneura</i>	<i>tearohai</i> Szwedo, 2004 ^E	81
<i>ix</i> Myers, 1928, <i>Erythroneura</i>	<i>triregia</i> Knight, 1973 ^E	81
Tribe TYPHLOCYBINI	<i>whakatipuensis</i> Szwedo, 2004 ^E	81
Genus <i>Edwardsiana</i> Zachvatkin, 1929 ^A	Genus <i>Pemmaton</i> Hamilton, 1999 ^E	81
<i>froggatti</i> (Baker, 1925) ^A	<i>asperum asperum</i> (Knight, 1973) ^E	81
<i>lethierryi</i> (Edwards, 1881) ^A	<i>asperum cognatum</i> (Knight, 1973) ^E	82
Genus <i>Eupteryx</i> Curtis, 1833 ^A	<i>bifurca</i> (Knight, 1973) ^E	82
<i>melissae</i> Curtis, 1837 ^A	<i>insulare</i> (Knight, 1973) ^E	82
Genus <i>Ribautiana</i> Zachvatkin, 1947 ^A	<i>montis</i> (Knight, 1973) ^E	82
<i>tenerrima</i> (Herrich-Schäffer, 1834) ^A	<i>parvum</i> (Evans, 1947) ^E	82
Subfamily ULOPINAE	<i>simile</i> (Knight, 1973) ^E	83
Tribe CEPHALELINI	<i>terrestre</i> (Knight, 1973) ^E	83
Genus <i>Paracephaleus</i> Evans, 1942 ^N	<i>townsendi</i> (Knight, 1973) ^E	83
<i>curtus</i> Knight, 1973 ^E	<i>variabile austrinum</i> (Knight, 1973) ^E	83
<i>hudsoni</i> (Myers, 1923) ^E	<i>variabile variabile</i> (Knight, 1973) ^E	84
<i>leptocarpi</i> Myers, 1923, <i>Cephalelus</i>	<i>verrucosum</i> (Knight, 1973) ^E	84
Tribe ULOPINI	Infraorder FULGOROMORPHA	84
Genus <i>Novolopa</i> Evans, 1966 ^E	Superfamily FULGOROIDEA	84
<i>falcata</i> Knight, 1973 ^E	Family ACHILIDAE	84
<i>infula</i> Knight, 1973 ^E	Subfamily ACHILINAE	84
<i>kuscheli</i> Knight, 1973 ^E	Tribe ACHILINI	84
<i>maculata</i> Knight, 1973 ^E	Genus <i>Achilus</i> Kirby, 1818 ^A	84
<i>montivaga</i> Knight, 1973 ^E	<i>flammeus</i> Kirby, 1818 ^A	84
<i>townsendi</i> Evans, 1966 ^E	Tribe PLECTODERINI	85
Subfamily XESTOCEPHALINAE	Genus <i>Agandecca</i> White, 1879 ^E	85
Tribe XESTOCEPHALINI	<i>annectens</i> White, 1879 ^E	85
Genus <i>Xestocephalus</i> Van Duzee, 1892 ^N	Family CIXIIDAE	85
<i>Nesotettix</i> Lindberg, 1936. Preoccupied.	Subfamily CIXIINAE	85
<i>Lindbergana</i> Metcalf, 1952. Replacement name.	Tribe CIXIINI	85
<i>ovalis</i> Evans, 1966 ^E	Genus <i>Aka</i> White, 1879 ^N	85
Family MEMBRACIDAE	<i>dunedinensis</i> Larivière, 1999 ^E	86
Subfamily CENTROTINAE	<i>duniana</i> (Myers, 1924) ^E	86
Tribe TERENCEINI	<i>finitima</i> (Walker, 1858) ^E	86
Genus <i>Acanthuchus</i> Stål, 1866 ^A	<i>rhodeae</i> Larivière, 1999 ^E	86
<i>trispinifer</i> (Fairmaire, 1846) ^A	<i>westlandica</i> Larivière, 1999 ^E	86
<i>gracilispinus</i> Stål, 1869	Genus <i>Cermada</i> Emeljanov, 2000 ^E	87
Family MYERSLOPIIDAE	<i>inexpectata</i> (Larivière, 1999) ^E new combination	87
Subfamily MYERSLOPIINAE	<i>aspilus</i> Walker, 1858, <i>Cixius</i>	
Tribe MYERSLOPIINI	<i>kermadecensis</i> (Myers, 1924) ^E	87
Genus <i>Myerslopi</i> Evans, 1947 ^E	<i>punctimargo</i> (Walker, 1858) ^E	87
<i>magna amplificata</i> Knight, 1973 ^E	<i>interior</i> Walker, 1858, <i>Cixius</i>	
<i>magna magna</i> Evans, 1947 ^E	<i>triregia</i> (Larivière, 1999) ^E new combination	88
<i>magna scabrata</i> Knight, 1973 ^E	Genus <i>Chathamaka</i> Larivière, 1999 ^E	88
	<i>andrei</i> Larivière, 1999 ^E	88
	Genus <i>Confuga</i> Fennah, 1975 ^E	88

<i>persephone</i> Fennah, 1975 ^E	88	<i>olenus</i> Fennah, 1965 ^E	94
Genus <i>Huttia</i> Myers, 1924 ^E	88	Genus <i>Eorissa</i> Fennah, 1965 ^E	94
<i>nigrifrons</i> Myers, 1924 ^E	88	<i>cicatrifrons</i> Fennah, 1965 ^E	94
<i>northlandica</i> Larivière, 1999 ^E	89	Genus <i>Nilaparvata</i> Distant, 1906 ^N	95
Genus <i>Koroana</i> Myers, 1924 ^E	89	<i>Kalpa</i> Distant, 1906	
<i>arthuria</i> Myers, 1924 ^E	89	<i>myersi</i> Muir, 1923 ^E	95
<i>lanceloti</i> Larivière, 1997 ^E	89	Genus <i>Notogryps</i> Fennah, 1965 ^E	95
<i>rufifrons</i> (Walker, 1858) ^E	89	<i>ithoma</i> Fennah, 1965 ^E	95
<i>helena</i> Myers, 1924		<i>melanthus</i> Fennah, 1965 ^E	95
Genus <i>Malpha</i> Myers, 1924 ^E	90	Genus <i>Notohyus</i> Fennah, 1965 ^E	95
<i>cockcrofti</i> Myers, 1924 ^E	90	<i>erosus</i> Fennah, 1965 ^E	95
<i>muii</i> Myers, 1924 ^E	90	Genus <i>Opiconsiva</i> Distant, 1917 ^{N?}	95
<i>iris</i> Myers, 1924		<i>Corbulo</i> Fennah, 1965	
Tribe OECLEINI	90	<i>dilpa</i> (Kirkaldy, 1907) ^{N?}	96
Genus <i>Tiriteana</i> Myers, 1924 ^E	90	Genus <i>Sardia</i> Melichar, 1903 ^N	96
<i>clarkei</i> Myers, 1924 ^E	90	<i>rostrata pluto</i> (Kirkaldy, 1906) ^N	96
Tribe PENTASTIRINI	90	Genus <i>Sulix</i> Fennah, 1965 ^E	96
Genus <i>Zeoliarus</i> Larivière & Fletcher, 2008 ^E	90	<i>insecutor</i> Fennah, 1965 ^E	96
<i>atkinsoni</i> (Myers, 1924) ^E	91	<i>miridianalis</i> (Muir, 1917) ^E	96
<i>oppositus</i> (Walker, 1851) ^E	91	<i>tasmani</i> (Muir, 1923) ^E	97
<i>marginalis</i> Walker, 1858, <i>Cixius</i>		<i>vetranio</i> Fennah, 1965 ^E	97
Tribe SEMONINI	91	Genus <i>Toya</i> Distant, 1906 ^A	97
Genus <i>Parasemo</i> Larivière, 1999 ^E	91	<i>dryope</i> (Kirkaldy, 1907) ^A	97
<i>hutchesoni</i> Larivière, 1999 ^E	91	Family DERBIDAE	97
Genus <i>Semo</i> White, 1879 ^E	91	Subfamily CEDUSINAE	98
<i>clypeatus</i> White, 1879 ^E	91	Tribe CEDUSINI	98
<i>harrisi</i> (Myers, 1924) ^E	92	Genus <i>Eocenchrea</i> Muir, 1913 ^N	98
<i>westlandiae</i> Larivière & Hoch, 1998		<i>Gonyphlepsia</i> Jacobi, 1928	
<i>southlandiae</i> Larivière & Hoch, 1998 ^E	92	<i>maorica</i> (Kirkaldy, 1909) ^E	98
<i>transinsularis</i> Larivière & Hoch, 1998 ^E	92	Family DICTYOPHARIDAE	98
Family DELPHACIDAE	92	Subfamily DICTYOPHARINAE	98
Subfamily ASIRACINAE	93	Tribe DICTYOPHARINI	98
Tribe UGYOPINI	93	Genus <i>Thanatodictya</i> Kirkaldy, 1906 ^N	98
Genus <i>Ugyops</i> Guérin-Méneville, 1834 ^N	93	Subgenus <i>Niculda</i> Kirkaldy, 1906 ^N	98
<i>Hygiops</i> Amyot & Audinet-Serville, 1843		<i>tillyardi</i> Myers, 1923 ^E	98
<i>Bidis</i> Walker, 1857		Family FLATIDAE	98
Subgenus <i>Paracona</i> Fennah, 1965 ^E	93	Subfamily FLATINAE	99
<i>pelorus</i> Fennah, 1965 ^E	93	Tribe FLATINI	99
<i>raouli</i> (Muir, 1923) ^E	93	Genus <i>Anzora</i> Medler, 1986 ^A	99
Subgenus <i>Ugyops</i> Guérin-Méneville, 1834 ^N	93	<i>unicolor</i> (Walker, 1862) ^A	99
<i>caelatus</i> (White, 1879) ^E	93	<i>cinerea</i> Kirkaldy, 1906, <i>Sephena</i>	
<i>rhadamanthus</i> Fennah, 1965 ^E	94	Tribe SIPHANTINI	99
Subfamily DELPHACINAE	94	Genus <i>Siphanta</i> Stål, 1862 ^A	99
Tribe DELPHACINI	94	<i>Phalainesthes</i> Kirkaldy, 1899	
Genus <i>Anchodelphax</i> Fennah, 1965 ^E	94		
<i>hagnon</i> Fennah, 1965 ^E	94		

<i>Siphantoides</i> Distant, 1910	
<i>Parasalurnis</i> Distant, 1910	
<i>Lombokia</i> Distant, 1910	
<i>acuta</i> (Walker, 1851) ^A	99
<i>cupido</i> Walker, 1851, <i>Poeciloptera</i>	
<i>elegans</i> Costa, 1864, <i>Cromna</i>	
<i>schauinslandi</i> Kirkaldy, 1899, <i>Phalainesthes</i>	
Family RICANIIDAE	100
Genus <i>Scolypopa</i> Stål, 1859 ^A	100
<i>Dechitus</i> Walker, 1862	
<i>australis</i> (Walker, 1851) ^A	100
<i>australis</i> Walker, 1858, <i>Flatoides</i>	
<i>urbana</i> Stål, 1859	

ACKNOWLEDGMENTS

For the opportunity to examine material in their care we thank J. M. W. Marris (Lincoln University, Lincoln), S. D. Pollard (Canterbury Museum, Christchurch), B. H. Patrick (formerly from Otago Museum, Dunedin), J. W. Early and R. Gilbert (Auckland War Memorial Museum, Auckland), R. L. Palma and P. J. Sirvid (Museum of New Zealand Te Papa Tongarewa, Wellington), M. J. Simmons (Perth Museum and Art Gallery, Perth, Scotland), and M. D. Webb (The Natural History Museum, London).

We are indebted to N. A. Martin (Plant and Food Research, Auckland) for contributing precious personal observations on biology and leafhopper study material as well as for his help with the list of associated plants.

We are also extremely thankful to J. S. Dugdale (Research Associate, Landcare Research, Nelson) for generously sharing cicada information accumulated over his long career as an entomologist.

We are grateful to overseas colleagues for providing copies of papers unavailable in New Zealand. For this we extend special thanks to L. L. Deitz (North Carolina State University, Raleigh).

Many thanks are also extended to R. J. B. Hoare (Landcare Research, Auckland), R. L. Palma (Museum of New Zealand Te Papa Tongarewa, Wellington), and M. Moir (University of Melbourne, Melbourne, Australia) for reviewing the manuscript in its entirety before publication.

We are grateful to B. E. Rhode (Landcare Research, Auckland) for help with the distribution and literature databases, distribution maps, photographs of primary types, and curation of the New Zealand Arthropod Collection, L.H. Clunie (Landcare Research, Auckland) for technical assistance, particularly dispatching of specimens, G. Hall (Landcare Research, Auckland) for technical support, particularly additional material collected in the field.

We also express our gratitude to D. W. Helmore for the habitus drawings of the front cover and popular summary, and to Jean-Claude Stahl and Raymond Coory (Museum of New Zealand Te Papa Tongarewa, Wellington) for the habitus photos of some cicada types.

Finally we also wish to acknowledge past and present Landcare Research librarians for their valuable help with the literature search and Landcare Research editors for their input at the time of composing introductory sections of the catalogue.

The first author is forever grateful to co-author M. J. Fletcher for his many encouragements along the way, especially his generosity and mentorship since 1997 towards building up her knowledge of Auchenorrhyncha and establishing herself as an Auchenorrhyncha worker in the Southern Hemisphere.

The bulk of the work towards this catalogue, including the first author's salary, was funded by the Defining New Zealand's Land Biota Outcome Based Funding programme of the Foundation for Research, Science and Technology (Contract C09X0501). The two co-authors contributed their own personal resources towards this work.

INTRODUCTION

The Auchenorrhyncha are a highly diverse group of hemimetabolous insects. They are treated here as a suborder of the Hemiptera and include the planthoppers (infraorder Fulgoromorpha), cicadas, froghoppers, spittlebugs, treehoppers, and leafhoppers (infraorder Cicadomorpha).

Auchenorrhyncha is a highly adaptable group that has evolved into a major component of the phytophagous insect fauna in most terrestrial ecosystems and adopted varied life habits on nearly all continents and islands (except Antarctica), suggesting a long evolutionary history. This insect group probably evolved since the lower Permian and over 42,000 extant species are described worldwide.

The world fauna comprises around 30 to 40 families depending on the classification being followed. Better known continental faunas such as those of North America, Europe, or Australia, include thousands of described species. Compared with these larger regions of the world, the New Zealand fauna, currently comprising 12 families, 68 genera, and 196 species, may appear relatively small, but what it lacks in size it makes up for in uniqueness, e.g., 82% of known species are endemic. From this point of view New Zealand can be regarded as a biodiversity “hot spot” for Auchenorrhyncha.

The present catalogue attempts to answer four questions most commonly asked by users of biosystematics information about a group of insects: What, where, when, and how? What Auchenorrhyncha occur in New Zealand, what is their status (e.g., endemic, native but not endemic, adventive, pest, disease vector) and what are the resources available to identify and study them? Where do species and genera occur (e.g., geographic distribution in New Zealand and overseas, habitats, dispersal abilities)? When are they active (e.g., seasonality, mating, oviposition, overwintering)? How do they live (e.g., feeding preferences, natural enemies)?

To answer these questions this catalogue brings together the available literature and collection-based information on extant taxa recorded from New Zealand’s main islands and its offshore islands. The catalogue has been written with the needs of biosystematists, identifiers, biosecurity and conservation managers, ecologists, other biologists, and members of the public in mind, hence the sections summarising for all species the geographic distribution, biology, dispersal power, and reference to available identification tools, taxonomic revisions, and natural history treatments. A species checklist, full bibliography, taxonomic index, eight appendices, species distribution maps, and primary type photographs are also provided.

Brief history of Fulgoromorpha and Cicadomorpha taxonomy in New Zealand

The first native Auchenorrhyncha described from New Zealand were the Cicadidae *Amphipsalta cingulata* (Fabricius, 1775) and *Rhodopsalta cruentata* (Fabricius, 1775). Subsequently, until about the 1930s, the majority of taxa were mostly described by European workers such as Walker (1850–1858) and White (1879), and by two New Zealand researchers Hudson (1891) and Myers (1921–1926).

Several early attempts at cataloguing the fauna were made during that same period, especially by Butler (1874), Hutton (1874, 1898, 1904), White (1879), and Kirkaldy (1909a). Such early checklists were most often straightforward compilations, but Hutton’s (1904) *Index Faunae Novae Zealandiae* was probably the most comprehensive and well documented, although his 1898 checklist was also very useful because it included keys to most known genera and several species. Kirkaldy’s (1909a) *List of Hemiptera (excluding Sternorrhyncha) of the Maorian Subregion, with Notes on a few Species* was largely based on Hutton (1904), with a few additional critical comments such as new synonymies or deletions from the fauna. Subsequently, while the New Zealand faunal inventory continued to be recorded in the various fascicles of the *General Catalogue of Homoptera* published by Metcalf from the 1930s to the late 1960s, there would not be another comprehensive faunal list until Wise’s (1977) *A synonymic checklist of the Hexapoda of the New Zealand sub-region, the smaller orders*. The latter recorded 11 families, 64 genera, and 160 species for the fauna, together with their synonyms, nomenclatural combinations, associated references, and some basic distributional information. A New Zealand checklist of Hemiptera (excluding Sternorrhyncha), listing valid names based on the 1977 list and subsequently published taxonomic changes, is continually being updated and made available on the internet (see Larivière, 2005, <http://hemiptera.landcareresearch.co.nz/>, New Zealand Hemiptera website). However, no complete synonymical checklist has been published since 1977.

Little taxonomic activity occurred during the 1940s and the 1950s, although Evans (1941, 1942, 1947) and Hudson (1950) added a few taxa to the fauna, in the leafhopper and cicada families respectively. The period from 1965 to 1984 was more prolific, yielding several new taxa and important taxonomic revisions, mainly due to the efforts of Fennah (1965; Delphacidae), Evans (1966; Cicadellidae *sensu lato*), Knight (1973–1976; Cicadellidae *sensu lato*), Fleming (1969, 1973, 1984; Cicadidae), Dugdale (1972; Cicadidae genera), and Dugdale & Fleming (1969, 1978; Cicadidae). Knight was, and remains, by far the most productive reviser of the New Zealand fauna, having worked

on most leafhopper groups, describing new genera and approximately 50 new species.

The most recent period of active taxonomic research has occurred since 1992. Of special interest are the publications of Hamilton & Morales (1992; revision of Aphrophoridae), Larivière (1997b, 1999; revision of Cixiidae), Larivière & Hoch (1998; revision of Cixiidae), Hamilton (1999b; re-examination of Myerslopiidae genera), Emeljanov (2000; new Cixiidae genus); Larivière & Fletcher (2004; identification key to genera and species of leafhopper families); Szvedo (2004a; new Myerslopiidae species); Larivière & Fletcher (2008; *Zeoliarus*, new genus of Cixiidae); and Fletcher & Larivière (2009; revision of *Anzygina*, Cicadellidae).

The best available revisions (i.e., those containing usable keys, comparative descriptions, characters of the male genitalia, type data, comprehensive synonymies, and enough distributional information), are for the families Aphrophoridae, Cicadellidae, Cicadidae (genus *Maoricicada* only), and Cixiidae. However, some or part of these groups need to be re-investigated, e.g., a new key to Aphrophoridae genera is needed, and the cicadellid genera *Arahura*, *Arawa*, *Horouta*, *Limotettix*, *Novothymbria*, *Paradorydium*, *Scaphetus*, *Matatua*, and *Zelopsis* need additional revisionary work. Knight's revisions of leafhopper groups and Fennah's (1965) review of the Delphacidae were based on limited study material. A large amount of new material has accumulated in collections since the end of the 1970s and these specimens remain largely unidentified. In the Cicadidae, four out of five genera have never been revised taxonomically. It may come as a surprise to many readers that the morphological taxonomy of cicadas, such an 'iconic' insect group in New Zealand, is still in its infancy and that what little published information is available is patchy and scattered. Larivière *et al.* (2006) improved access to existing information but this cannot replace the need for a thorough taxonomic treatment of the family Cicadidae.

The Delphacidae have never been thoroughly revised, although Fennah (1965) provided preliminary insights into the New Zealand fauna. The available work on Myerslopiidae and Ulopinae (Cicadellidae) is insufficient to provide a good understanding of the fauna, mainly because very few specimens were available to earlier workers. Szvedo (2004a) made a recent effort at describing new Myerslopiidae species but *ad hoc* descriptions based on very small sample sizes, sometimes involving only one sex, are not always as useful as one might think, especially in groups that are in great need of overall revision.

Furthermore, so much new material has been collected and deposited in New Zealand collections over the last 30 years – one of the most dynamic insect surveying periods in New Zealand – that numerous Auchenorrhyncha taxa

remain to be described even in groups worked on by previous researchers. The authors estimate that the Auchenorrhyncha fauna may reach 300 to 350 species when totally described.

Potential revisers of the fauna, whether from New Zealand or overseas, are encouraged to examine material from all the main New Zealand entomological museums and collections (see list, p. 130). They may also find it useful to note that over 65% of primary types of New Zealand Fulgoromorpha and Cicadomorpha (see type photographs, pp. 149-191) have been deposited in this country's entomological museums and collections (see also Palma *et al.*, 1989; Early & Gilbert, 1993; Nicholls *et al.*, 1998), mostly in the New Zealand Arthropod Collection (NZAC). Approximately 18% of types can also be located in the Museum of Natural History (London), leaving only about 17% of types scattered among other overseas collections. The high proportion of primarily local or readily accessible type repositories means specimens can be more easily studied, making the process of revising taxa relatively less complicated for Auchenorrhyncha than for many other insect groups, which have most of their New Zealand types scattered through several overseas collections. In addition, "Virtual" collections of New Zealand types are being made available on the internet (see Larivière & Rhode, 2002, <http://hemiptera.landcareresearch.co.nz/>, New Zealand Hemiptera website).

Higher classification

Bourgoin & Campbell (2002) proposed five monophyletic groups within the Hemiptera: Sternorrhyncha (psyllids, aleyrodids, aphids, coccids), Fulgoromorpha (planthoppers), Cicadomorpha (leafhoppers, treehoppers, spittlebugs, cicadas), Heteroptera (true bugs *sensu stricto*), and Coleorrhyncha (moss bugs). Traditionally the Fulgoromorpha and Cicadomorpha have been referred to as Auchenorrhyncha (a suborder of Hemiptera). Several recent studies have investigated the phylogenetic relationships between the five monophyletic suborders of Hemiptera or infraorders of Auchenorrhyncha (depending on the classification followed), e.g., Campbell *et al.*, 1995; Sorenson *et al.*, 1995; Yoshizawa & Saigusa, 2001; Bourgoin & Campbell, 2002; Dietrich, 2002; Shcherbakov & Popov, 2002; Szvedo, 2002. Other important issues were also investigated, such as the possibility that planthoppers could be grouped under the suborder Archaeorrhyncha and other Auchenorrhyncha under Clypeorrhyncha, and whether or not Auchenorrhyncha is a monophyletic lineage.

Cryan (2005) reconstructed a molecular phylogeny of the infraorder Cicadomorpha supporting the major relationships within this group as (Membracoidea (Cicadoidea,

Table 1. Higher classification of New Zealand Auchenorrhyncha (Hemiptera). ¹ Achilidae are paraphyletic in Urban & Cryan's (2007) phylogenetic hypotheses, with one achilid taxon arising from within the Derbidae. ² Hamilton (2001) gave an alternative view on Cercopoidea classification.

<p>FULGOROMORPHA</p> <p>Fulgoroidea</p> <p>Delphacidae</p> <p>Asiracinae</p> <p>Ugyopini</p> <p>Delphacinae</p> <p>Delphacini</p> <p>Cixiidae</p> <p>Cixiinae</p> <p>Cixiini</p> <p>Oecleini</p> <p>Pentastirini</p> <p>Semonini</p> <p>Derbidae</p> <p>Cedusinae</p> <p>Cedusini</p> <p>Achilidae ¹</p> <p>Achilinae</p> <p>Achilini</p> <p>Plectoderini</p> <p>Dictyopharidae</p> <p>Dictyopharinae</p> <p>Dictyopharini</p> <p>Flatidae</p> <p>Flatinae</p> <p>Flatini</p> <p>Siphantini</p> <p>Ricaniidae</p>	<p>Cicadellidae</p> <p>Deltocephalinae</p> <p>Athysanini</p> <p>Deltocephalini</p> <p>Macrostelini</p> <p>Opsiini</p> <p>Euacanthellinae</p> <p>Euacanthellini</p> <p>Eupelicinae</p> <p>Paradorydiini</p> <p>Iassinae</p> <p>Iassini</p> <p>Idiocerinae</p> <p>Macropsinae</p> <p>Tartessinae</p> <p>Thymbrini</p> <p>Typhlocybinae</p> <p>Empoascini</p> <p>Erythroneurini</p> <p>Typhlocybini</p> <p>Ulopinae</p> <p>Cephalelini</p> <p>Ulopiini</p> <p>Xestocephalinae</p> <p>Xestocephalini</p> <p>Membracidae</p> <p>Centrotinae</p> <p>Terentiini</p> <p>Cicadoidea</p> <p>Cicadidae</p> <p>Cicadettinae</p> <p>Cicadettini</p> <p>Cercopoidea ²</p> <p>Aphrophoridae</p>
<p>CICADOMORPHA</p> <p>Membracoidea</p> <p>Myerslopiidae</p> <p>Myerslopiinae</p> <p>Myerslopiini</p>	

Cercopoidea)) and compared results against previous hypotheses based on molecular and morphological data. Cryan's work offers the most recent high-level phylogeny for Cicadomorphan families placing, as did Bourgoïn & Campbell (2002), the Myerslopiidae as the sister group of the remaining Membracoidea. Cryan did not, however, test the hypothesis that Fulgoromorpha and Cicadomorpha may form a monophyletic lineage (the Auchenorrhyncha).

Urban & Cryan (2007) reviewed the main hypotheses previously put forward about the phylogeny of Fulgoroidea, both in terms of how planthopper families are related and how many families should be recognised. Their work represents the most encompassing phylogenetic hypothesis for this superfamily, so far using the greatest number of taxa and molecular markers.

Despite the ever growing body of phylogenetic work no final consensus has yet been reached on the monophyly and higher classification of Auchenorrhyncha. Pending further resolution of these matters, the traditional use of Auchenorrhyncha as a suborder or Hemiptera is retained in the present work. Table 1 follows mostly Cryan (2005) and Urban & Cryan (2007), and proposes a higher classification context in which to consider the taxa treated alphabetically in this catalogue. In Table 1, infraorders and families are arranged phylogenetically. Subfamilies and tribes of Auchenorrhyncha (excluding Cicadidae), follow Fletcher & Larivière (2001) and are listed alphabetically. The higher classification of Cicadidae follows Moulds (2005a).

Readers may find the following references useful to identify families and tribes of Auchenorrhyncha: Dietrich,

2000 (Cicadellidae), 2005 (Cicadomorpha), Fletcher & Carver, 1991 (Fulgoroidea), Fletcher *et al.*, 1991a–b (Cercopoidea, Cicadelloidea/Membracoidea), Fletcher & Larivière, 2001 (Auchenorrhyncha), Fletcher & Stevens, 1988 (Cicadellidae), and Wilson, 2005 (Fulgoromorpha). Several links to other authoritative resources on world Auchenorrhyncha are available on the New Zealand Hemiptera website <http://hemiptera.landcareresearch.co.nz/>.

Geographic distribution

The New Zealand fauna is highly insular, with 41% of genera and 81% of species presently recorded as being endemic (Table 2).

The maps on pages 199–221 summarise the geographic distribution of Auchenorrhyncha species and subspecies occurring in New Zealand, based on the area codes of Crosby *et al.* (1976, 1998). This catalogue is the first attempt at presenting a synopsis of species distributions across all families of Fulgoromorpha and Cicadomorpha for New Zealand, based on information scattered through entomological collections as well as the literature. As a result, most species now appear to be more widely distributed than originally perceived in the literature; even well-studied species have been shown to occur in more areas of New Zealand. Nevertheless, roughly 95 native species, or 55% of the entire native fauna, are currently known from ten populations or fewer, and many of these species are known from the type locality only.

A greater number of species-group taxa (133) occur in the South Island, although 64 native taxa are actually restricted to this island. A slightly lower number of taxa (119) occur in the North Island, including 44 native taxa restricted to this island. As many as 65 taxa are shared between the two islands. For each auchenorrhynchan family the percentage of native species restricted to the North or South Island, or shared between the two islands, is shown in Table 4.

Patterns of taxonomic diversity and the number of known species-group taxa by areas of New Zealand are illustrated on Maps 4–7 (pp. 195–198). The areas so far known to contain the highest diversity (Map 4, p. 195) are, from north to south: North Island – ND (60: 47 endemics, 7 other natives, 6 adventives), AK (64: 45 endemics, 8 other natives, 11 adventives), WN (73: 63 endemics, 6 other natives, 4 adventives); South Island – NN (65: 50 endemics, 5 other natives, 10 adventives), and MC (56: 40 endemics, 5 other natives, 11 adventives). The areas so far known to harbour the highest number of New Zealand endemics (Map 5, p. 196) are: North Island – ND (47), AK and BP (45), TO (46), WN (63); South Island – NN (50), BR (45), and MC (40).

Some endemic species-group taxa are restricted to a single area of New Zealand (Map 6, p. 197). Currently, the areas known to have the greatest number of local endemics are: North Island – ND (5), WN (5); South Island – NN (4). This is closely followed by five areas of the South Island (SD, MB, MC, FD, SL), each with three known local endemics, but it is likely that the largely unexplored and unspoiled area of Fiordland (FD) is a greater reservoir of endemism than currently estimated.

The areas that include the largest number of adventive taxa (Map 7, p. 198) are: North Island – AK (11), HB (11); South Island – NN (10), MC (11). This result is hardly surprising given that these are relatively warm areas of New Zealand as well as its main trading ports or agricultural regions. Many of the adventive taxa have good dispersal abilities, some are attracted to artificial lights, and most can adapt well to living in highly or partly modified environments. Consequently a somewhat high number of adventives is also expected from neighbouring areas as can be observed on Map 7.

From the Chatham Islands seven out of 12 native species-group taxa (58% of fauna) are shared with the following New Zealand areas: North Island–South Island (1 taxon), North Island–South Island–SI (1); TH–North Island–South Island (3); KE–TH–North Island–South Island (1); TH–North Island (1). The Kermadec Islands share five out of 10 native taxa (50% of fauna) with TH–North Island–South Island (1 taxon), North Island–South Island (1), TH–North Island–South Island–CH (3). The Three Kings Islands, with 21 native taxa, have 17 of these (80% of fauna) in common with other parts of New Zealand: North Island–South Island (4 taxa); North Island–South Island–CH (1); North Island (7); North Island–CH (1); KE–North Island–South Island (1); KE–North Island–South Island–CH (1); North Island–South Island–SI (2). Auchenorrhyncha have never been recorded from New Zealand's subantarctic islands (Antipodes, Aucklands, Bounties, Campbell Island, or Snares).

Faunal composition and affinities

Table 2 shows the number of genera and species occurring in New Zealand compared with Australia and the rest of the world. Table 3 provides a more detailed overview of the New Zealand fauna, by families and genera. The described New Zealand fauna (196 species) is about 13% the size of the known Australian fauna (around 1500 species). Currently, 15 families of Auchenorrhyncha occurring in Australia are not represented in New Zealand. In the Cicadellidae, the largest component of Cicadomorpha biodiversity in both countries, five subfamilies and 28 tribes occurring in Australia, are not represented in New Zealand.

Table 2. Families and number of taxa of Auchenorrhyncha occurring in New Zealand, Australia, and the World. Higher classification as in Table 1. () = number of endemic taxa. * The Australian genera *Myerslopella* (6 species) and *Sagmation* (1 species) have been moved by Hamilton (1999b) from Myerslopiidae to Euacanthellinae (tribe Sagmatiini), a subfamily of Cicadellidae. ** World numbers for families of Fulgoromorpha are from Bourgoin (2008).

	New Zealand	Australia	New Zealand	Australia	World
	Genera		Species		
CICADOMORPHA					
Aphrophoridae	5(1)	7	16(14)	14	800
Cicadellidae	27(6)	230	78(52)	736	>22000
Cicadidae	5(3)	42	34(34)	234	2600
Membracidae	1(0)	38	1(0)	86	3200
Myerslopiidae*	2(2)	0	16(16)	0	20
FULGOROMORPHA**					
Achilidae	2(1)	22	2(1)	32	473
Cixiidae	11(10)	49	26(26)	158	2021
Delphacidae	10(5)	41	18(15)	721	1543
Derbidae	1(0)	19	1(1)	50	1468
Dictyopharidae	1(0)	4	1(1)	12	723
Flatidae	2(0)	26	2(0)	90	1269
Ricaniidae	1(0)	10	1(0)	31	368
Total	68(28)	488	196(160)	1515	>31093
% endemism	41%		81%		

The number of recognised adventive species in New Zealand is currently 24, or about 12% of the total Auchenorrhyncha fauna. No family is endemic to New Zealand, but all Myerslopiidae present in this country (about 70% of world species) are endemic. The three largest families in New Zealand are the Cicadellidae (78 species or 40% of the fauna), Cicadidae (34 species or 17%), and Cixiidae (26 species or 13%). These families are also well represented in Australia (see Table 2). In New Zealand, some endemic genera in the families Cicadellidae, Achilidae, Cixiidae, Delphacidae, and Derbidae are currently represented by a single species and are in need of further revision.

Most taxa shared with Australia and other parts of the world are cosmopolitan and probably introduced, except those listed in Table 5. Native taxa shared with regions neighbouring New Zealand are mostly in common with eastern continental Australia, to a lesser degree with Tasmania and Norfolk Island, and in some instances with Lord

Howe Island and New Caledonia. Such faunal affinities may be indicative of a Gondwanan origin. Current data do not indicate any affinity with South America, except at the family level for Myerslopiidae. As in many parts of the world, the family Cicadellidae is taxonomically diverse and this is where most faunal affinities are observed, followed by the family Delphacidae.

At the generic level New Zealand shares 40% of its native fauna with Australia *sensu lato* (including Tasmania, Norfolk Island, Lord Howe Island), or 20 out of 50 native genera. At the species level this is approximately 5%. The composition of the shared native fauna does not appear to have varied much over the past several decades to 100 years.

As for the island groups in the Tasman Sea between Australia and New Zealand, Norfolk Island alone has one taxon (*Kikihia*: Cicadidae) with a solely New Zealand relationship. Close relationships are not generally shown with New Caledonia, except perhaps for the genus *Carystoterpa*

Table 3. Number of genera and species of Auchenorrhyncha occurring in New Zealand. A, adventive; E, endemic; N, native but not endemic.

INFRAORDER

Family

Subfamily

Tribe

Genus

Species E N A

CICADOMORPHA

Aphrophoridae

		16	14	0	2
<i>Basiloterpa</i>	N	1	1	0	0
<i>Bathyllus</i>	A	1	0	0	1
<i>Carystoterpa</i>	N	12	12	0	0
<i>Philaenus</i>	A	1	0	0	1
<i>Pseudaphronella</i>	E	1	1	0	0

Cicadellidae

Deltocephalinae

Athysanini

<i>Arahura</i>	E	3	3	0	0
<i>Arawa</i>	N	5	3	2	0
<i>Exitianus</i>	N	1	0	1	0
<i>Limotettix</i>	N	4	3	1	0
<i>Scaphetus</i>	E	2	2	0	0

Deltocephalini

<i>Horouta</i>	N	1	1	0	0
<i>Maiestas</i>	N	3	0	3	0

Macrostelini

<i>Balclutha</i>	A?	3	0	0	3
<i>Macrosteles</i>	A	1	0	0	1
<i>Nesoclutha</i>	N	1	0	1	0

Opsiini

<i>Orosius</i>	A	1	0	0	1
----------------	---	---	---	---	---

Euacanthellinae

Euacanthellini

<i>Euacanthella</i>	A	1	0	0	1
---------------------	---	---	---	---	---

Eupelicinae

Paradorydiini

<i>Paradorydium</i>	N	8	8	0	0
---------------------	---	---	---	---	---

Iassinae

Iassini

<i>Batracomorpus</i>	N	2	0	2	0
----------------------	---	---	---	---	---

Idiocerinae

<i>Idiocerus</i>	A	1	0	0	1
------------------	---	---	---	---	---

<i>Rhytidodus</i>	A	1	0	0	1
-------------------	---	---	---	---	---

Macropsinae

<i>Zelopsis</i>	E	1	1	0	0
-----------------	---	---	---	---	---

Tartessinae

Thymbrini

<i>Novothybris</i>	E	16	16	0	0
--------------------	---	----	----	---	---

Typhlocybinae

Empoascini

<i>Kybos</i>	A	2	0	0	2
--------------	---	---	---	---	---

<i>Matatua</i>	E	2	2	0	0
----------------	---	---	---	---	---

Erythroneurini

<i>Anzygina</i>	N	6	4	1	1
-----------------	---	---	---	---	---

Typhlocybini

<i>Edwardsiana</i>	A	2	0	0	2
--------------------	---	---	---	---	---

<i>Eupteryx</i>	A	1	0	0	1
-----------------	---	---	---	---	---

<i>Ribautiana</i>	A	1	0	0	1
-------------------	---	---	---	---	---

Ulopiinae

Cephalellini

<i>Paracephaleus</i>	N	2	2	0	0
----------------------	---	---	---	---	---

Ulopiini

<i>Novolopa</i>	E	6	6	0	0
-----------------	---	---	---	---	---

Xestocephalinae

Xestocephalini

<i>Xestocephalus</i>	N	1	1	0	0
----------------------	---	---	---	---	---

Cicadidae

Cicadettinae

Cicadettini

<i>Amphipsalta</i>	E	3	3	0	0
--------------------	---	---	---	---	---

<i>Kikihia</i>	N	13	13	0	0
----------------	---	----	----	---	---

<i>Maoricicada</i>	E	14	14	0	0
--------------------	---	----	----	---	---

<i>Notopsalta</i>	N	1	1	0	0
-------------------	---	---	---	---	---

<i>Rhodopsalta</i>	E	3	3	0	0
--------------------	---	---	---	---	---

Membracidae

Centrotinae

Terentiini

<i>Acanthuchus</i>	A	1	0	0	1
--------------------	---	---	---	---	---

Myerslopiidae

Myerslopiinae

Myerslopiini

<i>Myerslopiia</i>	E	6	6	0	0
--------------------	---	---	---	---	---

<i>Pemmation</i>	E	10	10	0	0
------------------	---	----	----	---	---

FULGOROMORPHA

Achilidae

Achilinae

Achilini

<i>Achilus</i>	A	1	0	0	1
----------------	---	---	---	---	---

Plectoderini

<i>Agandecca</i>	E	1	1	0	0
------------------	---	---	---	---	---

Cixiidae

Cixiinae

Cixiini

<i>Aka</i>	N	5	5	0	0
------------	---	---	---	---	---

<i>Cermada</i>	E	4	4	0	0
----------------	---	---	---	---	---

<i>Chathamaka</i>	E	1	1	0	0
-------------------	---	---	---	---	---

<i>Confuga</i>	E	1	1	0	0
----------------	---	---	---	---	---

<i>Huttia</i>	E	2	2	0	0
---------------	---	---	---	---	---

<i>Koroana</i>	E	3	3	0	0
----------------	---	---	---	---	---

<i>Malpha</i>	E	2	2	0	0
---------------	---	---	---	---	---

Oecleini

<i>Tiriteana</i>	E	1	1	0	0
------------------	---	---	---	---	---

Pentastirini

<i>Zeoliarus</i>	E	2	2	0	0
------------------	---	---	---	---	---

Semonini

<i>Parasemo</i>	E	1	1	0	0
-----------------	---	---	---	---	---

<i>Semo</i>	E	4	4	0	0
-------------	---	---	---	---	---

Table 3 (continued)

INFRAORDER					
Family					
Subfamily					
Tribe					
Genus		Species	E	N	A
Delphacidae		18	15	2	1
Asiracinae					
Ugyopini					
<i>Ugyops</i>	N	4	4	0	0
Delphacinae					
Delphacini					
<i>Anchodelphax</i>	E	2	2	0	0
<i>Eorissa</i>	E	1	1	0	0
<i>Nilaparvata</i>	N	1	1	0	0
<i>Notogryps</i>	E	2	2	0	0
<i>Notohyus</i>	E	1	1	0	0
<i>Opiconsiva</i>	N?	1	0	1	0
<i>Sardia</i>	N	1	0	1	0
<i>Sulix</i>	E	4	4	0	0
<i>Toya</i>	A	1	0	0	1
Derbidae		1	1	0	0
Cedusinae					
Cedusini					
<i>Eocenchrea</i>	N	1	1	0	0
Dictyopharidae		1	1	0	0
Dictyopharinae					
Dictyopharini					
<i>Thanatodictya</i>	N	1	1	0	0
Flatidae		2	0	0	2
Flatinae					
Flatini					
<i>Anzora</i>	A	1	0	0	1
Siphantini					
<i>Siphanta</i>	A	1	0	0	1
Ricaniidae		1	0	0	1
<i>Scolypopa</i>	A	1	0	0	1
Total (12 families, 68 genera)		196	160	13	23

(Aphrophoridae). Most taxa recorded from the Kermadec Islands are either adventive, widely distributed in the subtropical South Pacific, or (sometimes) shared with New Zealand main islands and Australia; not one species has a sole relationship with New Zealand. Only four species-group taxa (*Carystoterpa subtacta*, Aphrophoridae; *Kikihia cutora exulis*, Cicadidae; *Cermada kermadecensis*, Cixiidae; *Ugyops (Paracona) raouli*, Delphacidae) are currently recorded as being endemic to the Kermadec Islands.

Table 4. Percentage of native species restricted to the North or South Island, or shared between the two islands. Data exclude species present on offshore islands.

	North I.	South I.	Shared
CICADOMORPHA			
Aphrophoridae	70%	0%	30%
Cicadellidae	19%	64%	17%
Cicadidae	26%	41%	33%
Membracidae			
(adventive)	0%	0%	0%
Myerslopiidae	31%	46%	23%
FULGOROMORPHA			
Achilidae (1 sp.)	0%	0%	100%
Cixiidae	42%	26%	32%
Delphacidae	67%	0%	33%
Derbidae (1 sp.)	100%	0%	0%
Dictyopharidae (1 sp.)	0%	0%	100%
Flatidae (adventive)	0%	0%	0%
Ricaniidae (adventive)	0%	0%	0%

Notes on families

New Zealand Auchenorrhyncha are generally diurnal and live in lowland to mountain forests and shrublands, although a number of groups are typically found in more open habitats, such as tussock grasslands, and in subalpine environments. Native species usually live within the confines of their natural habitats but some species also live in modified ecosystems and exotic tree plantations. Depending on families and genera, species can be predominantly planticolous, arboreal, or even epigeal. Hostplants are known with certainty for less than 20% of taxa. The taxonomy and biology of immature stages are undescribed for the majority of taxa. Anecdotal evidence suggests that parasitic wasps, birds, predatory beetles, spiders, and mites may be among the major natural enemies of New Zealand Auchenorrhyncha. Overall, about 25% of the fauna is either brachypterous or micropterous, with active dispersal by flight being unlikely for these taxa.

Cicadomorpha

Aphrophoridae. This large cosmopolitan family has relatively few representatives in New Zealand, with five genera (three natives, including one endemic) and 16 species (including 14 endemics). Also referred to as true spittlebugs, aphrophorids are xylem-feeders and usually nymphs are

Table 5. Native taxa shared with Australia, Norfolk Island, Lord Howe Island, and New Caledonia.

X, present on New Zealand main islands. AU= Australia (continental); KE=Kermadec Islands; LH=Lord Howe Island; NC=New Caledonia; NI=Norfolk Island; NZ=New Zealand; SA=South America; TA=Tasmania; TH=Three Kings Islands.

INFRAORDER**Family**

Subfamily, tribe <i>Genus, species</i>	NZ	AU	TA	NI	LH	NC	SA	Other regions
CICADOMORPHA								
Aphrophoridae								
<i>Basilioterpa</i>	TH				X			
<i>Carystoterpa</i>	X			X		X		
Cicadellidae								
Dectocephalinae, Athysanini								
<i>Arawa</i>	X	X	X					
<i>A. novella</i>	X	X	X					
<i>A. pulchra</i>	X	X						
<i>Exitianus plebeius</i>	KE	X		X				Guam, Papua New Guinea, Samoa
<i>Limotettix</i>	X	X	X					Nearctic, Palaearctic
<i>Limotettix pullatus</i>	X	X	X					
Dectocephalinae, Dectocephalini								
<i>Horouta</i>	X	X	X					
<i>Maiestas knighti</i>	X	X						Fiji, Guam, Papua New Guinea
<i>Maiestas samuelsoni</i>	KE			X		X		Fiji, Phillipines
<i>Maiestas vetus</i>	X,KE	X						
Dectocephalinae, Macrostelini								
<i>Nesoclutha phryne</i>	X	X	X	X	X	X		Java
Eupelicinae, Paradorydiini								
<i>Paradorydium</i>	X	X						Ethiopian, Palaearctic
Iassinae, Iassini								
<i>Batracomorphus adventisiosus</i>	X	X						Vanuatu
<i>Batracomorphus angustatus</i>	X,KE	X		X				Fiji, Niue, Tonga
Typhlocybinae, Erythroneurini								
<i>Anzygina</i>	X	X	X	X				Papua New Guinea
<i>A. zealandica</i>	X	X	X	X				
Ulopinae, Cephalini								
<i>Paracephaleus</i>	X	X	X					
Cicadidae								
Cicadettinae, Cicadettini								
<i>Kikihia</i>	X,KE			X				
<i>Notopsalta</i>	X	X						
FULGOROMORPHA								
Cixiidae								
Cixiinae, Cixiini								
<i>Aka</i>	X	X	X					
Delphacidae								
Asiracinae, Ugyopini								
<i>Ugyops</i>	X,KE	X		X	X			Indonesia, South Pacific, Ethiopian, Oriental
Delphacinae, Delphacini								
<i>Nilaparvata</i>	X	X						Fiji, Guam, Indonesia, PNG, Ethiopian, Oriental, Palaearctic
<i>Opiconsiva</i>	X	X						Ethiopian
Derbidae								
Cedusinae, Cedusini								
<i>Eocenchrea</i>	X	X				X		
Dictyopharidae								
Dictyopharinae, Dictyopharini								
<i>Thanatodictya</i>	X	X						Oriental

visible as frothy masses or “cuckoo-spit” on the stems of shrubs or small trees. However, not all species produce this froth, used by nymphs either to reduce the risk of dehydration or to deter enemies such as parasites.

Of the genera occurring on New Zealand’s main islands, *Carystoterpa* and *Pseudaphronella* are of particular interest. *Carystoterpa* is native genus with endemic species occurring mostly in the North Island. The habitat of many species is unknown but members of this genus are usually found on native trees and shrubs, such as *Coprosma* (Rubiaceae) the most likely hostplant for *Carystoterpa tristis*, and on surrounding exotic vegetation. *Pseudaphronella jactator* is the largest New Zealand aphrophorid. It is a North Island species usually found on trees and shrubs in montane to subalpine environments. Both genera are characterised by fully-winged adults and species are wide-ranging in New Zealand.

Cicadellidae. With 27 genera and 78 species distributed among ten subfamilies, the leafhoppers constitute the most diverse group of New Zealand Auchenorrhyncha. The bulk of the native fauna belongs to the subfamilies Deltocephalinae, Eupelicinae, and Tartessinae. Cicadellids occur in almost every type of habitat. New Zealand deltocephalines (e.g., *Arahura*, *Arawa*, *Horouta*, *Limotettix*) occur predominantly on low plants (very few are arboreal, e.g., *Scaphetus*), tartessines (*Novothymbris*) inhabit trees and shrubs, and eupelicines (*Paradorydium*) live on or very close to the ground surface. As observed elsewhere (e.g., Dolling, 1991; U.K.) brachyptery is more frequent in leafhoppers living close to the ground surface. Most leafhopper genera occurring in New Zealand feed on phloem plant sap, but the introduced Typhlocybiinae feed on plant parenchyma and this is also believed to be the case for native species in this subfamily.

The economic importance of cicadellids has generated a large amount of research worldwide. In New Zealand, a handful of leafhoppers, mainly in the subfamily Typhlocybiinae, have some recognised economic impact on crops. *Edwardsiana froggatti* (adventive) is the most important leafhopper pest in this country, feeding on pipfruit trees (especially apples) and causing a reduction in plant vigour and photosynthesis, as well as damage to fruits. *Ribautiana tenerrima* (adventive) feeds on raspberries, boysenberries, and blackberries, and may be a minor pest in commercial berryfruit gardens. This species may be able to transfer phytoplasmas between *Rubus* plants. *Batracomorphus angustatus* (lassinae, possibly adventive) is a plant disease vector on tomato and potato. *Anzygina dumbletoni* (possibly adventive) has been found on cane fruit and strawberries, whereas *Anzygina zealandica* (native) is a grass species which occasionally moves into commercial orchards. *Eupteryx melissae* (adventive) is a poten-

tial pest of commercially grown herbs. It is known to feed on rosemary, sage, lemon balm, mint, horehound, and catmint. *Nesoclutha phryne* (native Deltocephalinae) and *Orosius argentatus* (adventive Deltocephalinae) are recognised plant disease vectors in Australia.

Native leafhopper genera of special interest. The endemic genus *Arahura* (Deltocephalinae: Athysanini) appears to be associated with native grass species. Additional field collecting may reveal it to contain more species and to be more widely distributed than is currently recognised.

The genus *Novothymbris* (Tartessinae: Thymbrini), also endemic to New Zealand, is the most diverse leafhopper genus with 16 species, and the sole representative of the subfamily Tartessinae in this country. Species distributions suggest a rich endemic fauna adapted to the montane and subalpine environments of the southern North Island mountains and the Southern Alps (South Island).

The genus *Paradorydium* (Eupelicinae: Paradorydiini) is also unique in that all eight New Zealand species are endemic and occur only on the South Island. One species is found on Banks Peninsula (MC), one species on Stephens Island (SD), and the remaining six species show localised allopatric distributions in the Southern Alps, mostly on each side of the Westland (WD) beech gap — a *Nothofagus*-impoverished area in South Westland — although *P. philpotti* occurs on both sides of this gap and on Stewart Island. Wing condition in *Paradorydium* is characterised by submacropterous coriaceous forewings and micropterous hindwings, suggesting low vagility, including an inability to fly.

The endemic monotypic genus *Zelopsis* is arboreal, as it is usually the case for members of the subfamily Macropsinae, with southern beech (*Nothofagus*) as its hostplant. The correlation is high between the distribution of *Z. nothofagi* and that of *Nothofagus* forests on New Zealand’s main islands, which may suggest related evolutionary histories and additional undescribed or extinct species in this genus.

The endemic Typhlocybiinae genus *Matatua* (tribe Emposcini) is probably arboreal. This has been ascertained for *M. maorica* and is also likely for *M. montivaga*. The two species are allopatric on each side of the Cook Strait. These very small leafhoppers may prove more diverse and more widely distributed once their habitat is clarified through additional field collecting.

Anzygina is a native typhlocybinae genus (tribe Erythroneurini) with a group of three endemic species (*A. barratae*, *A. ramsayi*, *A. toetoe*) possibly representing a separate genus (see also Fletcher & Larivière, 2009) distributed on the central North Island (*A. toetoe*; BP, RI), on each side of the Cook Strait on the southern North Island

and northern South Island (*A. ramsayi*; RI, BR), and in southernmost parts of the South Island (*A. barratta*; SL). This apparent disjunct distribution pattern at the species level probably reflects coverage gaps in terms of field collecting and identification of material in collections and museums. The curation of these very small, easily shriveled species requires critical point drying if they are to be kept in dry storage, and also dissection of the male genitalia for accurate identification. *Anzygina* species have reduced forewing venation and are believed to feed on plant parenchyma. The hostplant is confirmed for *A. toetoe* (endemic grass toetoe or *Cortaderia fulvida*, Poaceae) and suspected for *A. ramsayi* (endemic grass tree or neinei species in the genus *Dracophyllum*, Epacridaceae).

The subfamily Ulopinae represents a primitive group of leafhoppers with a wide world distribution on all land masses except the Nearctic and Neotropical Regions. Ulopine leafhoppers are small, chunky insects living close to or at the surface of the ground, e.g., in the soil near the roots of plants, in leaf litter, or on low plants. They are cryptic insects, generally resembling ground debris or leaf litter fragments accumulated beneath hostplants, and have legs adapted for jumping. Vagility is low in this group with most species lacking hindwings and possessing coriaceous forewings and, consequently, incapable of flight although fully-developed hindwings have been observed in the females of some New Zealand species (*Paracephaleus curtus*, *P. hudsoni*). Szewo (2002) hypothesised that Ulopinae might be nocturnal insects. The endemic genus *Novolopa* is of particular interest because it is entirely a South Island and Stewart Island group that has apparently radiated into subalpine to alpine environments. Geographical and biological knowledge on this genus is scanty. Species are thought to feed on plant phloem. Hostplants can only be hypothesised for *N. falcata* (*Pimelea*) and *N. maculata* (*Kelleria*) (both Thymelaeaceae). So far as is known, all *Novolopa* species lack hindwings in both sexes.

Cicadidae. Cicadas are probably among the most familiar insects due to their loud singing at the height of the New Zealand summer. Thirty-four endemic species distributed among five genera are described from this country. New Zealand cicadas are found from lowland coastal areas to the subalpine and alpine zones, in a wide range of habitats, for example coastal sand dunes, riverbeds, grasslands, scrublands, shrublands and native forests, exotic tree plantations, as well as garden and orchard hedges. Most of the forest species occur in the North Island, while the South Island is mostly characterised by a cicada fauna living in rocky open spaces. In urban environments, clapping cicadas (*Amphipsalta* species) can often be heard singing on garden trees, buildings, fences, and even lamp posts. The clay bank cicada (*Notopsalta sericea*) can also be an urban

dweller in the North Island, often using any sun-warmed flat concrete surface as a singing station. The native genus *Kikihia* comprises 14 described species, with one species (*K. convicta*) known only from Norfolk Island. In New Zealand the genus has traditionally been regarded as including three sets of endemic species grouped together by Fleming (1975, 1984), mainly on the basis of habitat preferences: the “shade singers” (*K. cauta*, *K. scutellaris*), the “green foliage cicadas” (*K. cutora*, *K. dugdalei*, *K. horologium*, *K. laneorum*, *K. ochrina*, *K. paxillulae*, *K. subalpina*), and the “grass and scrub cicadas” (*K. angusta*, *K. longula*, *K. muta*, *K. rosea*). These groups are not supported phylogenetically (see Arensburger *et al.*, 2004b) but they provide a convenient way to look at species that are closely similar in external morphology and quite often also in habits, ecological preferences, and/or acoustic behaviour. The black cicadas (*Maoricicada* species), also with 14 described species, have evolved in relation to the development of the New Zealand alpine environment where they have radiated and occupied a wide range of ecological niches.

The phylogeny and biogeography of New Zealand cicadas is a popular research topic among New Zealand and overseas scientists, especially molecular biologists. It has been the subject of several recent papers including Arensburger *et al.* (2004a, phylogeny and biogeography of genera; 2004b, phylogeny and dispersal patterns of *Kikihia*), Buckley *et al.* (2001a, phylogeny of *Maoricicada campbelli*; 2001c, origin and evolution of *Maoricicada* in the alpine biota; 2002, origin of New Zealand genera; 2006, evolution of *Maoricicada*), Buckley & Simon (2007, evolutionary radiation in *Maoricicada*), and Hill *et al.* (2009, phylogeography of *Maoricicada campbelli*).

These publications are readily available and results from the above studies are not repeated here, other than to indicate that 1) the closest relatives of New Zealand cicadas are from Australia and New Caledonia, 2) the evolution of the New Zealand fauna appears to have originated from multiple dispersal events (at least two) across the Tasman Sea, from Australia and possibly New Caledonia within the last 12 million years, and 3) more recently, approximately within the last five million years, speciation events led to the highly diverse genera *Kikihia* and *Maoricicada*, most likely through adaptive radiation in new habitats created by the rise of the Southern Alps.

Although the ancestors of extant taxa might have arrived via transoceanic dispersal, New Zealand cicadas have relatively short hindwings and long-distance dispersal by flight is now unlikely in most cases.

Little has been published on the biology of New Zealand cicadas apart from some basic information on singing stations, habitats, and acoustic behaviour. As in other faunas,

the life of New Zealand cicadas is mostly spent in the nymphal stage, underground, and feeding on the roots of plants. Limited knowledge is available about life span, but the consensus amongst local entomologists is that at least some New Zealand species spend three to five years as nymphs, and two to four months as adults. Marris (2007) reported the following organisms as potential enemies of cicadas: parasitic wasps (cicada eggs); predatory beetles (cicada nymphs); fungal diseases (cicada nymphs and adults); kiwi birds (late instar cicada nymphs reaching the ground surface); various other birds, and spiders (cicada adults). The economic importance of cicadas is usually low, but when they occur in very large numbers significant damage may be caused by the female creating open cuts in plant tissue where eggs are laid, thus providing suitable access to boring insects and pathogens, e.g., *Amphipsalta* species in exotic tree plantations and fruit orchards. Pullulations (mass emergences) of cicadas can also become a major annoyance to workers in forestry and horticulture, whose activities are disrupted by loud song and repeated contact with flying insects.

The following general cicada references may be of interest to readers. Gibbs (2006) discussed the phenomenon of speciation through adaptive radiation in New Zealand cicadas. Larivière *et al.* (2006) provided a virtual guide to New Zealand cicadas, including identification tools and information on distribution, habitats, and songs. Marris (2007) wrote a very useful popular overview, including general information on morphological appearance, species diversity, habitats, distribution, life cycles, and enemies.

Membracidae. Only one horned treehopper species, *Acanthuchus trispinifer*, has so far been recorded from New Zealand and it is an Australian adventive. Membracids are usually sedentary but are capable of jumping strongly when disturbed. Adults and nymphs are often gregarious and nymphs are ant-attended. The biology and distribution of *A. trispinifer* in New Zealand have been studied by Eyles (1971).

Myerslopiidae. This is a small relict group of Southern Hemisphere leafhoppers, once thought to belong to the subfamily Ulopinae (Cicadellidae) but now recognised as a monophyletic lineage and a sister-group to all other Membracoidea families (Cryan, 2005). Myerslopiids are small, cryptic, ground-dwelling insects. Adults and nymphs live in leaf litter and other ground debris of high organic content forests. New Zealand taxa are characterised by large heads, spinose hindlegs, compact almost barrel-shaped bodies with cuticular extensions on head and thorax, other prominences and punctures on their coriaceous forewings, and other parts of the body that is usually encrusted with soil and litter particles offering nearly perfect camouflage

with their surroundings. Functional hindwings are lacking in all species. Vestigial wing buds have been only observed in *M. magna magna*, the most widely distributed taxon. Consequently, active dispersal by flight is excluded for this family. The feeding strategies of Myerslopiidae are unknown (Szwedo 2004a), but they are thought to feed on fungi from the decomposing leaf and soil debris in which they live. Two endemic genera are known from New Zealand, *Myerslopiia* (six species, two subspecies) and *Pemmation* (nine species, three subspecies). Of the 15 species of New Zealand Myerslopiidae, six (five *Myerslopiia*, one *Pemmation*) are currently known from the type locality only.

Of the six *Myerslopiia* species, three have a disjunct distribution in the South Island and Stewart Island. One species, *M. magna*, is distributed in both the North and South Islands, with the nominotypical subspecies *M. magna magna* occurring in the southern half of the North Island, from the Central Volcanic Plateau (or Taupo Line, approx. 39°S) south to northwestern areas of the South Island (MB, NN, SD). The subspecies *M. magna amplificata* is distributed slightly further southwest in the South Island (BR), and *M. magna scabrata* is apparently restricted to Fiordland (FD), the south-westernmost region of the South Island. Two species are found only in the North Island and show, like their South Island congeners, a highly disjunct distribution pattern between them. *Myerslopiia tearohai* is found in the southeast of the northern half of the North Island on Mount Te Aroha, Bay of Plenty (BP), and *M. triregia* is endemic to the Three Kings Islands located northwest of the North Island.

In *Pemmation*, three species (*P. bifurca*, *P. terrestre*, *P. verrucosum*) are restricted to the North Island, two species (*P. asperum*, *P. parvum*) are shared between the North and South Islands, and four species (*P. insulare*, *P. montis*, *P. simile*, *P. townsendi*) occur only in the South Island. No species is so far known from Stewart Island. *Pemmation asperum* is shared between both main islands, with *P. asperum asperum* occurring north of the Cook Strait in southernmost areas of the North Island, and *P. asperum cognatum* in mid-Canterbury (MC) in the South Island. *Pemmation parvum* shows a broad distribution from the Auckland (AK) region in the North Island, south to Westland (WD) in the South Island. Of the South Island endemics, *P. townsendi* is the most widely distributed with *P. insulare* and *P. simile* occupying what appears to be a subset of the distribution of *P. townsendi* in NN and WD respectively, although neither is known to occur in the same locality as *P. townsendi*.

Much more field collecting and associated taxonomic research is required before sufficient information on distribution, biology, and comparative morphology is obtained

so that a reasonable understanding of the evolutionary history of this highly interesting Gondwanan group can be gained. New Zealand has 70% of the world species of Myerslopiidae, with relatives in South America (Chile) only. The genera *Myerslopella* Evans, 1977 (Australia) and *Sagmation* Hamilton, 1999 (New Caledonia, Australia) have been placed in the tribe Sagmatiini (Cicadellidae: Euacanthellinae) by Hamilton (1999b) who dismembered the subfamily Myerslopiinae based on a morphological study suggesting that superficial similarities in these genera are convergent, probably in response to similar life habits.

The disjunct distribution of Myerslopiidae in New Zealand and Chile is similar to that of Coleorrhyncha (Peloriidiidae) although these also occur in Australia, Tasmania, and Lord Howe Island. According to Hamilton (1999b) there are few insect families with such Southern Hemisphere distributions, suggesting a transantarctic dispersal route available to flightless insects before the breakup of Gondwana. In the rare case of wingless genera with low number of extant species confined to Chile and New Zealand, the implication is of a very long evolutionary history of faunal elements that have persisted virtually unchanged since the Gondwanan breakup.

Fulgromorpha

Achilidae. Achilid nymphs may generally be found in logs, under loose bark, or in leaf litter where they are believed to feed on fungus. Adults feed on phloem and generally lay their eggs by attaching them to woody particles in the leaf litter or to soil particles. Little is known about the biology of *Agandecca annectens*, the only native and endemic Achilidae known from New Zealand, but the life habits of this lowland to subalpine, forest-shrubland species may follow what is generally known for the family. Adult *Agandecca annectens* are macropterous, which may assist in their dispersal.

Cixiidae. Larivière (1999) revised the New Zealand fauna and provided an exhaustive account of the distribution and biology of all species. Cixiid nymphs appear to live primarily underground and feed on plant roots. Eggs are usually laid in the soil and surrounded by a waxy secretion produced by the adult female. These facts have not, however, been verified for most known species. Adults are phloem-feeders. Little is known about hostplant requirements although most New Zealand species appear to favour woody dicotyledons, a lesser number of species are associated with ferns, and very few feed on gymnosperms. Species of the genus *Zeoliarus* occur and feed on monocotyledons, mainly Poaceae and *Phormium* (Phormiaceae). Habitat preferences have been observed, for example, most New Zealand cixiids inhabit forested or bush environments, in-

cluding scrublands and shrublands, from coastal lowlands to the subalpine zones. The majority of genera are found in lowland to lower mountain mixed podocarp-broadleaf habitats. The genus *Aka* may be closely associated with *Nothofagus* forests and possibly represents an older lineage. *Semo* is strictly a subalpine genus containing highly similar allopatric species; this may indicate relatively recent speciation. *Confuga persephone* is the only cave-dwelling species known from New Zealand to date. New Zealand cixiid planthoppers are mostly characterised by submacropterous to macropterous wingforms, with a tendency towards brachyptery more strongly demonstrated in the genera *Aka* and *Chathamaka*. In New Zealand the main economic importance of Cixiidae is as vectors of phytoplasma plant diseases, e.g., *Zeoliarus atkinsoni*, on flax (*Phormium*) species.

Delphacidae. Delphacids may be the most economically important planthopper family in the world because they feed on, or transmit virus diseases, to cereals, an important food source for humans globally. Adults feed on the phloem of monocots. Like the adults, nymphs roam freely. Only one species, *Toya dryope*, is currently recorded as being adventive to New Zealand. The native biostatus of *Opiconsiva dilpa* remains uncertain. However, neither of these species are recognised as plant pests or plant disease vectors in this country. *Nilaparvata lugens* is a vector of virus disease of rice in South-East Asia but there is no evidence of disease transmission by its New Zealand congener *Nilaparvata myersi*. All other species of Delphacidae are endemic to New Zealand. Wing polymorphism is displayed by some species, but most New Zealand endemics are brachypterous or, in a few cases, species may possess well-developed forewings and vestigial hindwings, e.g., *Sulix*. Consequently, New Zealand delphacids are thought to have low vagility by flight.

Derbidae. The nymphs of some species of Derbidae feed on fungi while most adults feed on the phloem of vascular plants. Little is known about the biology of *Eocenchrea maorica*, the only native and endemic derbid so far known from New Zealand. However, the life habits of this North Island, lowland-montane, forest species are expected to resemble those generally encountered in other derbids. Adults, including newly emerged individuals (teneral), have been found on *Astelia banksii* (Asphodelaceae) which occurs on the forest floor of lowland forest and which may serve as a food plant. The fact that recently emerged adults have been found on this plant could provide clues about the general forest floor environment required for oviposition and nymphal development. Adults *Eocenchrea maorica* are macropterous, which may assist their ability to disperse.

Dictyopharidae. The family Dictyopharidae is poorly represented in the Australasian region and only one species *Thanatodictya tillyardi* is known from New Zealand. This species is endemic, with other *Thanatodictya* species occurring in Australia. Species of this genus have the head extending considerably in front of the eyes into a long process (see drawing on front cover of this contribution). Nymphs and adults feed on grass.

Flatidae. The flatid planthoppers occurring in New Zealand are Australian adventives. Their taxonomy and biology have been well studied by Fletcher (1979a, 1985, 1988, 2002). Nymphs are sessile and produce abundant wax filaments. Species are macropterous, apparently polyphagous on various plant families, feed on vascular plant phloem, and are wide-ranging in New Zealand. *Anzora unicolor* is of economic importance as vector of fireblight on apple and pear.

Ricaniidae. The only ricaniid planthopper occurring in New Zealand is an adventive species from Australia. The biology and economic importance in New Zealand of *Scolypopa australis*, the passionvine hopper, has been well studied locally, e.g., Cumber, 1966, 1967; Deitz, 1981; Hill & Steven, 1989. Biology, development, and oviposition in Australia have been described by Fletcher (1979b). This species is polyphagous and occurs on a wide range of plants in New Zealand, and is a pest of vine crops such as kiwifruit. In addition, *S. australis* sometimes feed on poisonous plants, e.g., tutu or *Coriaria arborea*, and secrete honeydew which, in times of low nectar supply, may be gathered by honey bees and incorporated into honey that is consequently poisonous to humans (Palmer-Jones *et al.*, 1947). *Scolypopa australis* is a macropterous species dispersing easily and occurring in large numbers during the summer months. It is not unusual to find individual plants (native or exotic) covered by hundreds of individuals.

Conservation

The Department of Conservation has responsibility for protecting and conserving New Zealand's native plants and animals. The Department's *Species Priority Ranking System* of Molloy & Davis (1994) provided criteria for scoring species according to various levels of threat so that management and/or recovery plans could be subsequently established. A list of priority invertebrate species for conservation was established in this way by Molloy & Davis (1994). McGuinness (2001) used these criteria and developed species profiles for taxa on the list, providing additional descriptive information to initiate or support key conservation actions. In addition, McGuinness (2001) added a number of invertebrates of potential conservation interest to the original list.

The Department of Conservation's *Species Ranking System* categories as translated in the 2001 profiles and applied to Auchenorrhyncha are presented here in order to provide a comparative framework to consider species in this catalogue and those belonging to the suborder Heteroptera (see Larivière & Larochelle, 2004 catalogue). One species of Cicadomorpha and five species of Fulgoromorpha were profiled by McGuinness (2001): *Maoricicada myersi* (Cicadidae, conservation category I); *Confuga persephone* (Cixiidae, conservation category A); *Huttia nigrifrons* (Cixiidae, conservation category I); *Malpha cockcrofti* (Cixiidae, conservation category I); *Malpha muiri* (Cixiidae, conservation category I); and *Semo harrisi* (Cixiidae, conservation category I). Category A referred to "highest priority threatened species for conservation action", and category I to "species about which little is known but, based on existing knowledge, are considered to be under threat".

The most recent simultaneous review of the *New Zealand Threat Classification System* and the *Lists of Threatened Taxa* occurred in 2005, but was not published until 2007 (see Hitchmough *et al.*, 2007). It provided revised threat classifications and categories for the above taxa, except *Huttia nigrifrons*, which was not included in the list. This is a well-known, broadly distributed species in the North Island that, in any case, needed to be removed from the list of threatened species.

The conservation status of the Auchenorrhyncha species listed by Hitchmough *et al.* (2007) is reviewed here. The threat category 'Range Restricted' applied to *Maoricicada myersi* (Cicadidae) and *Confuga persephone* (Cixiidae) appears appropriate. The threat category 'Sparse' to *Semo harrisi* (Cixiidae) is not appropriate. This well-known, wide-ranging South Island species should be excluded from any threat classification. If *Malpha cockcrofti* and *M. muiri* (Cixiidae) are to be kept under the threat category 'Sparse', then the 95 taxa listed in Appendix H, roughly one in two Auchenorrhyncha, would probably warrant consideration by the Department of Conservation for threat classification. However, there is no tangible evidence whatsoever to suggest that *Malpha cockcrofti*, *M. muiri*, or any other taxa in Appendix H have suffered high rates of decline in the past, and have now stabilised in refugia as Hitchmough *et al.* (2007) seems to suggest for species listed as 'Sparse' or 'Range Restricted'. The most recent Department of Conservation *New Zealand Threat Classification System Manual* (Townsend *et al.*, 2007) replaces the categories 'Range Restricted' and 'Sparse' by a single category 'Naturally Uncommon', but this probably does not apply to *Malpha cockcrofti*, *M. muiri*, or most other taxa in Appendix H either.

It is more likely that most of the 95 taxa in Appendix

H, including *M. cockcrofti* and *M. muiri*, should be considered as data deficient, consequently needing further investigation and without reasonable basis on which to apply any sound threat classification category at this stage. Information on these taxa is simply too scanty, as is the case for many hemipterans that are not taxonomically revised, biologically well-known, or well surveyed. Appendix H should therefore be regarded as a watch list for future consideration and further taxonomic work, to be reviewed as more knowledge is gained about these taxa.

METHODS AND CONVENTIONS

This catalogue is based on an exhaustive survey of the literature published between 1777 and July 2009 (over 800 publications) and the recording of information associated with authoritatively identified specimens deposited in the following New Zealand entomological museums and collections:

- AMNZ Auckland War and Memorial Museum, Auckland.
 CMNZ Canterbury Museum, Christchurch.
 LUNZ Entomology Research Museum, Lincoln University, Lincoln.
 MONZ Museum of New Zealand Te Papa Tongarewa, Wellington.
 NZAC New Zealand Arthropod Collection, Landcare Research, Auckland.
 OMNZ Otago Museum, Dunedin (including BPNZ, Brian Patrick Private Collection).

Field surveys and collecting techniques. Most areas of New Zealand have been visited by Auchenorrhyncha collectors. This has provided a basic inventory of taxa and resulted in New Zealand collections having representatives of most species, either described or undescribed. The South Island has generally received the closest attention whereas the North Island has been somewhat neglected by collectors, except for the Northland, Auckland, and Wellington areas. Coastal habitats (estuaries, sand dunes, salt marshes, mangroves), flaxlands, edges of streams crossing forests, the underside of loose tree bark, mosses, and rotten logs are among the macro- and microhabitats least surveyed.

The material collected so far is rich in geographical information but often poor in associated biological data. Furthermore, many species are represented only by a few specimens, impeding the ability of taxonomists to assess morphological variations within and between populations. More specialised field surveys need to be carried out in the

future in order to provide a more detailed picture of geographical distribution and to increase our knowledge of the natural history of as many species as possible.

Taxonomic information. The appropriate taxonomic literature was checked to obtain original spellings, years of publication, page citations, type-species designations, type-locality information, and the nomenclatural acts and changes affecting the status of New Zealand taxa.

The catalogue is arranged alphabetically by infraorder, superfamily, family, subfamily, tribe, genus, subgenus, species, and subspecies. This arrangement provides the quickest access to information and the easiest use of the catalogue by non-specialists, as well as specialists. A table showing the higher classification of Fulgoromorpha and Cicadomorpha is also provided (Table 1). The nomenclature adopted in this catalogue adheres to the provisions established in the *International Code of Zoological Nomenclature*, Fourth Edition (1999).

Family-group names. Valid names of families, subfamilies, and tribes (when available) are given as bold centred headings. Treatment of nomenclature of family-group names is not included. The familial classification adopted in this catalogue is explained in the Introduction (see pp. 20–22) and follows Table 1.

Genus-group names. Valid names are given with author and year as bold centred headings. Under this heading the valid name and its synonyms, in chronological order, are given with citation of the original authority, year of publication, and page reference. Information on original rank, availability, homonymy and synonymy, or changes of rank are also included. Incorrect subsequent spellings are not given unless they affect our understanding of the nomenclature. The full synonymy of adventive taxa from outside the Australian Region is omitted except in some cases for added clarity. Instead, literature references providing access to the complete synonymy are given. Type species (in their original combination) and method of fixation are given for valid native genus-group names as well as synonyms. Strict adherence is given to the definition of “available name” by the *International Code of Zoological Nomenclature* (1999).

Species-group names. Valid names are given in their current combination with author and year as bold left justified headings. Under this heading valid names of native species, subspecies, and their synonyms are given in chronological order as for genus-group names. Information on original rank, availability, homonymy and synonymy, or changes of rank are also included. Incorrect spellings are not given unless they affect our understanding of the nomenclature. The full synonymy of adventive taxa from outside the Australian Region is omitted except in some cases for added

clarity. Instead, literature references providing access to the complete synonymy are given. New combinations are listed chronologically and followed by a colon (:) and the bibliographic reference of the combination. Type data are provided for available names of native species and subspecies.

Due to conservation imperatives, common names of cicadas have been provided or created anew. For other Auchenorrhyncha groups, only previously existing common names have been provided.

Biostatus. This is indicated for all genera, species, and subspecies (A=adventive; E=endemic; N=ative but not endemic). The biostatus categories used are defined in the glossary (Appendix A). A combination of criteria was used to assess whether taxa were adventive including: recency of first New Zealand record in the literature and collections; fit of current geographical and ecological distribution with recognised natural patterns or similarity of such distribution with that of other adventive arthropods; and dispersal ability, especially in relation to flightlessness and distance from the nearest overseas populations.

Type data. These are listed in the following format: Type, Holotype, Lectotype, Syntypes, or Neotype followed by sex (accompanied by number of specimens in the case of syntypes), acronym of entomological collection or museum (repository; see Appendix C for list of acronyms), area code (Crosby *et al.* 1976, 1998) of type locality and name of type locality. An asterisk indicates type specimen(s) not seen by the authors.

Photographs of primary types deposited in New Zealand collections and museums were captured through a Leica DC500 digital camera on a Leica MZ-12 stereo-microscope or, in the case of larger specimens, with a Canon 20D or 40D as well as the in-focus composite imaging systems Auto-Montage (Synoptics, U.K.) and Helicon Focus (HeliconSoft, Ukraine). Type label information was digitised using a flat bed scanner (Microtek ScanMaker 4). Further photo-processing and figure layouts were done with the software packages PhotoShop® and CorelDRAW® graphics suite. The type photographs in this catalogue (pp. 149–191) and photos of other types are available on the Landcare Research website (<http://www.landcareresearch.co.nz>, New Zealand Hemiptera website).

Geographic distribution. The catalogue contains distributional information for genera, subgenera, species, and subspecies, based on literature and specimen label data. The distribution of supraspecific groups is usually given as broad geographical regions, or in slightly more detail if the taxon is widely known within the Australian Region.

For species and subspecies, the area codes of Crosby

et al. (1976, 1998) are given in alphabetical order for the North Island, South Island, Stewart Island, and Offshore Islands, respectively. When appropriate, the extralimital distribution (outside New Zealand and its offshore islands) is also included, as well as the first New Zealand records of adventive species. Full distributional information is given for species and subspecies known from ten localities or fewer with the collection acronym or literature reference supporting each record. Appendix E contains a list of the main collecting localities and their geographic coordinates.

Two-letter abbreviations for the area codes of Crosby *et al.* (1976, 1998) used in this catalogue are as follows (see maps 1–3, pp. 192–194):

New Zealand. North Island: AK, Auckland; BP, Bay of Plenty; CL, Coromandel; GB, Gisborne; HB, Hawke's Bay; ND, Northland; RI, Rangitikei; TK, Taranaki; TO, Taupo; WA, Wairarapa; WI, Wanganui; WN, Wellington; WO, Waikato. **South Island:** BR, Buller; CO, Central Otago; DN, Dunedin; FD, Fiordland; KA, Kaikoura; MC, Mid Canterbury; MK, Mackenzie; NC, North Canterbury; NN, Nelson; OL, Otago Lakes; SC, South Canterbury; SD, Marlborough Sounds; SL, Southland; WD, Westland. **Stewart Island, SI. Offshore Islands:** AN, Antipodes Islands; AU, Auckland Islands; BO, Bounty Islands; CA, Campbell Island; CH, Chatham Islands; KE, Kermadec Islands; SN, Snares Islands; TH, Three Kings Islands.

The authors are aware of the arbitrary nature of the Crosby *et al.* (1976, 1998) system for recording specimen localities, as well as its obvious limitations when it comes to uncovering biogeographical patterns. Nevertheless, recording geographic information in this way is a useful, well-established approach adopted by most New Zealand entomological collections, museums and publication series. It has the advantages of allowing distributional information to be uniformly recorded and easily compared. Broad biogeographical trends can still be observed and it remains relatively easy to relate species distributions to any one of a range of 'more natural' land or ecosystem classifications, e.g., Department of Conservation's Ecological Regions and Districts of New Zealand, especially when georeferenced point-data are also available.

During the course of this research species-level geographical information and type-locality data were maintained in a Microsoft Access® database. This database was used to prepare the species distribution maps (pp. 199–221, presented alphabetically by taxa), the maps on taxonomic diversity (pp. 195–198), and the appendices listing type localities (Appendix G) and species by areas of New Zealand (Appendix F). All maps were prepared using the software CorelDRAW graphics suite. Appendix D provides a list of taxa incorrectly or erroneously recorded from New Zealand.

Biological information. The information provided under the heading **Biology** is based on the literature and specimen label data. In order to eliminate spurious records, an effort was made to summarise available information by using the smallest common denominator representing the essentials of each species' requirements. Information given between square brackets (e.g., []) is assumed from available knowledge on related taxa. Biological trends were summarised for each species, using a series of standardised terms following the approach taken in the previous catalogue on the suborder Heteroptera (Larivière & Laroche, 2004). Many terms used in this catalogue are defined in the glossary (Appendix A). Altitudinal distribution, or distribution related to altitude or elevation, is expressed as coastal, lowland, montane, subalpine, and alpine, following the categories used by Brownsey & Smith-Dodsworth (2000). Habitat and/or plant associations are listed from most commonly encountered to least commonly encountered associations. When this is not known, plants are listed alphabetically. Seasonality, or the period of year when an animal is active, is expressed as months from September (start of spring) to August (end of winter). Because this information was gathered mostly from collection data, it may only be loosely indicative of actual seasonality. Feeding-type is indicated as much as possible. Dispersal power, or the capability of dispersal, has been assessed when possible, using wing condition and flight data (including light-trapping observations). Wing condition was evaluated for each species using the literature and personal observations made in the field and in the laboratory.

References. Under Reference(s), only the most important references are given for valid taxa, with an indication of their contents between parentheses. In general the authors aimed to limit the number of references to no more than ten for each species or subspecies. Page numbers are only provided for taxonomic citations from recent catalogues.

Notes. Additional information is given as Notes under each valid taxon.

CATALOGUE

Taxa are listed in alphabetical order from infraorders to subspecies. Valid subordinal and family-group names are presented without authorship and date of publication; such information can readily be obtained from recent world catalogues and revisions. Each genus-group name or species-group name is listed with its author(s), date, and page of publication. Valid species-group names are listed alphabetically in **bold italics** in their **current combinations**; they are also recorded in *italics* in their *original combinations*. Synonyms are presented chronologically and in *italics* in their *original combinations*. Synonyms of adventive species from outside the Australian Region are omitted, except in some cases for more clarity. The New Zealand biostatus (**A**=adventive; **E**=endemic; **N**=native but not endemic) of each genus- and species-group taxon is indicated in **bold superscript** font following valid names.

Order HEMIPTERA

Suborder AUCHENORRHYNCHA

Infraorder CICADOMORPHA

References. Cryan, 2005 (classification, phylogeny). Dietrich, 2005 (keys to families), 2006 (bibliography, identification).

Superfamily CERCOPOIDEA

Family APHROPHORIDAE

Spittlebugs

References. Lallemand, 1928 (revision, Samoa), 1937 (checklist, Oceania; Cercopidae). Zimmerman, 1948 (Hawaii, revision). Metcalf, 1962a (catalogue, world). Evans, 1966 (Australia, New Zealand, taxonomy). Wise, 1977 (checklist, New Zealand). Hamilton, 1980a (revision, Polynesia), 1980b (revision, Solomon Islands), 1981a (Loyalty Islands, New Caledonia, revision), 1981b (Banks Islands, Fiji, New Hebrides, revision). Fletcher *et al.*, 1991a (Australia, overview; Cercopoidea). Hamilton & Morales, 1992 (New Zealand, revision; as Cercopidae). Liang, 1998 (Oriental Region, Palaearctic Region, taxonomy). Fletcher & Larivière, 2001 (Australia, New Zealand; checklist, identification). Fletcher & Watson, 2002a (Australia, checklist; update by Fletcher, 2006). Liang & Fletcher, 2002 (classification, morphology), 2003 (Australia, key to genera, review). Larivière, 2005 (checklist, New Zealand).

Genus *Basilioterpa* Hamilton & Morales, 1992^N

Basilioterpa Hamilton & Morales, 1992: 12. Type species: *Basilioterpa bullata* Hamilton & Morales, 1992, by original designation.

Geographic distribution. Australia (Lord Howe Island), New Zealand (Three Kings Islands).

References. Hamilton & Morales, 1992 (New Zealand, revision). Liang & Fletcher, 2003 (Australia, distribution, taxonomy).

***Basilioterpa bullata* Hamilton & Morales, 1992^E**

Type photograph p. 149.

Basilioterpa bullata Hamilton & Morales, 1992: 12. Holotype male (NZAC); TH, West Island.

Geographic distribution (Map p. 199). Offshore Islands: TH–South West Island (Hamilton & Morales, 1992). West Island (NZAC).

Biology. Lowland, coastal. Collected on *Entelea*, *Meryta sinclairii*, *Myrsine*, *Pittosporum*. Seasonality: February. [Xylem-feeder.] Wing condition: Macropterous.

Reference. Hamilton & Morales, 1992 (biology, distribution, New Zealand, taxonomy).

Genus *Bathyllus* Stål, 1866^A

Bathyllus Stål, 1866a: 68. Type species: *Lepyronia moerens* Stål, 1854 (= *Aphrophora albicincta* Erichson, 1842), designated by Lallemand, 1912: 52.

Bathyllus [sic]: Evans, 1966: 316.

Geographic distribution. Australia (continental, Tasmania); New Zealand (adventive).

References. Metcalf, 1962a: 193–195 (catalogue, world). Evans, 1966 (Australia, taxonomy). Liang & Fletcher, 2003 (Australia, distribution, taxonomy).

***Bathyllus albicinctus* (Erichson, 1842)^A**

Aphrophora albicincta Erichson, 1842: 285. Type status and repository unknown; “Van Diemen’s Land” [=Tasmania].

Lepyronia convexa Walker, 1851b: 726. Syntypes (2)* (BMNH); “New Holland” [=Australia]. Synonymised by Evans, 1966: 318.

Lepyronia moerens Stål, 1854: 251. Syntype(s)* (NHRM): “Nova Hollandia” [=Australia]. Synonymised by Evans, 1966: 318.

Lepyronia albigutta Walker 1858a: 191. Holotype* sex undetermined (BMNH; “from Mr Edwards” collection); Melbourne. Synonymised by Evans, 1966: 318.

Bathyllus albicinctus: Hacker, 1926: 246.

Bathyllus [sic] *albicinctus*: Evans 1966: 318.

Geographic distribution (Map p. 199). North Island:

ND–Whangarei region, including Bream Bay, Ocean Beach, Urquharts Bay. First New Zealand record: ND–Whangarei region (Ashcroft & George, 2004). Extralimital range: Australia (continental, Tasmania).

Biology. [Lowland.] Found along coastal beaches. Collected on *Calystegia soldanella*, *Senecio elegans*, *Senecio mikanioides* (adults, nymphs, spittle masses), *Arctotis stoechadifolia*, *Dactylis glomerata* (nymphs, spittle masses), and *Lathyrus latifolius* (adults); all potential hostplants. In Australia, mostly found on low herbaceous plants; also collected on small tufted lilies where it occurs right down into the bases of the leaves in a mass of spittle. Seasonality: September, October. Xylem-feeder. Wing condition: Macropterous, with coleopteroid forewings.

References. Metcalf, 1962a: 194 (catalogue; world). Evans, 1966 (Australia, taxonomy). Liang & Fletcher, 2003 (Australia, distribution, taxonomy).

Notes. This species appears well established in the Whangarei region (ND) and may become more widespread in the future, given its southern distribution in Australia and the wide distribution of its potential hostplants in New Zealand. Ashcroft & George (2004) reported that this species disperses by flight although adult wing condition suggests that *B. albicinctus* is unlikely to fly long distances.

Genus *Carystoterpa* Lallemand, 1936^N

Carystoterpa Lallemand, 1936: 264. Type species: *Ptyelus trimaculatus* Butler, 1874, by original designation.

Geographic distribution. New Caledonia, Norfolk Island, New Zealand.

References. Metcalf, 1962a: 554–556 (catalogue, world). Evans, 1966 (taxonomy). Wise, 1977: 71 (checklist, New Zealand). Hamilton & Morales, 1992 (New Zealand, revision).

Note. Liang & Fletcher (2003) did not include the Norfolk Island endemic *Carystoterpa fusiformis* Hamilton & Morales, 1992, in their review of the Australian fauna.

***Carystoterpa aurata* Hamilton & Morales, 1992^E**

Carystoterpa aurata Hamilton & Morales, 1992: 13. Holotype* female (BMNH); WN, Silverstream.

Geographic distribution (Map p. 199). North Island: WN–Silverstream.

Biology. [Lowland.] Habitat: Unknown. Seasonality: December. [Xylem-feeder.] Wing condition: Unknown.

Reference. Hamilton & Morales, 1992 (biology, distribution, New Zealand, taxonomy).

***Carystoterpa chelyon* Hamilton & Morales, 1992^E**

Carystoterpa chelyon Hamilton & Morales, 1992: 13. Holotype* male (BMNH); ND, Kaitaia.

Geographic distribution (Map p. 199). North Island: ND–Houhora (Hamilton & Morales, 1992). Kaitaia (NZAC). Kohukohu (Hamilton & Morales, 1992). Te Kao (Hamilton & Morales, 1992). Te Pahi (Hamilton & Morales, 1992).

Biology. Lowland. Collected on *Leptospermum scoparium*. Seasonality: November–December, March. [Xylem-feeder.] Wing condition: Macropterous.

Reference. Hamilton & Morales, 1992 (biology, distribution, New Zealand, taxonomy).

Note. According to Hamilton & Morales (1992) the holotype should be in NZAC but only four paratypes of this species could be located in that collection.

***Carystoterpa fingens* (Walker, 1851)^E**

Ptyelus fingens Walker, 1851b: 718. Lectotype* male (designated by Hamilton & Morales, 1992; BMNH); type locality uncertain (presumably Auckland vicinity; see **Notes** below).

Philaenus fingens: White, 1879: 215.

Carystoterpa fingens: Evans, 1966: 323.

Geographic distribution (Map p. 199). North Island: AK, BP, CL, ND, TK, WI, WN. South Island: KA, NN, SD. Offshore Islands: TH.

Biology. Lowland, mostly coastal. Collected on *Alcea*, *Astelia*, *Cassinia retorta* [= *Ozothamnus leptophyllus*], *Carmichaelia*, *Coprosma lucida*, *C. macrocarpa*, *C. repens*, *Geniostoma*, *Hebe*, *Hieracium* (occasionally on *H. pilosella*, commonly on *H. caespitosum*, *H. lepidulum*, *H. praealtum*; adults, nymphs), *Kunzea ericoides*, *Leptospermum scoparium*, *Melicytus*, *Melicytus-Corynocarpus* associations, *Metrosideros excelsa*, *Muehlenbeckia*, *Myoporum laetum*, *Olearia*, *Phormium*, *Pseudopanax*, *Solanum*, *Tecoma*; coastal shrubs in general. Seasonality: September–March (mostly November–January), August. [Xylem-feeder.] Wing condition: Macropterous.

References. Metcalf, 1962a: 45 (catalogue, world; as *Ptyelus fingens*). Evans, 1966 (taxonomy). Wise, 1977: 71 (checklist, New Zealand). Hamilton & Morales, 1992 (biology, distribution, New Zealand, taxonomy). Syrett & Smith, 1998 (biology).

Notes. The long list of nomenclatural citations given under *C. fingens* by Wise (1977) was updated by Hamilton & Morales (1992) who recognised *C. trimaculata* and *C. subvirescens* as valid species. The male lectotype was collected by W. Colenso and the type locality, according to Hamilton & Morales (1992), is presumably in the North

Island, in the vicinity of Auckland. The distribution records from TK and KA are based on females, probably of this species, that could not be associated with males by Hamilton & Morales (1992).

***Carystoterpa ikana* Hamilton & Morales, 1992^E**

Type photograph p. 149.

Carystoterpa ikana Hamilton & Morales, 1992: 14. Holotype male (AMNZ); ND, Mangamuka Hills [=Mangamuka Range], forest summit.

Geographic distribution (Map p. 199). North Island: ND–Bay of Islands (Hamilton & Morales, 1992). Kaeo (Hamilton & Morales, 1992). Kaitaia (Hamilton & Morales, 1992). Mangamuka Range (AMNZ). Whangarei Heads (Hamilton & Morales, 1992). WN–Wellington (Hamilton & Morales, 1992). WO–Matamata (NZAC).

Biology. Lowland, montane (lower). Habitat: Unknown. Seasonality: October–March. [Xylem-feeder.] Wing condition: Macropterous.

Reference. Hamilton & Morales, 1992 (biology, distribution, New Zealand, taxonomy).

***Carystoterpa maori* Hamilton & Morales, 1992^E**

Type photograph p. 149.

Carystoterpa maori Hamilton & Morales, 1992: 15. Holotype male (NZAC); BR, Lake Rotoiti, East camping area.

Geographic distribution (Map p. 199). North Island: AK–Titirangi (NZAC), WA, WN. South Island: BR, NC, NN, SD.

Biology. Lowland, montane. Collected on *Coprosma*, long grass, *Nothofagus*, *Sphagnum* (moss). Seasonality: October–March. [Xylem-feeder.] Wing condition: Macropterous.

Reference. Hamilton & Morales, 1992 (biology, distribution, New Zealand, taxonomy).

Note. The Auckland record appears to stand in isolation, but the North Island distribution of this species may be more extensive than is currently recognised.

***Carystoterpa minima* Hamilton & Morales, 1992^E**

Type photograph p. 149.

Carystoterpa minima Hamilton & Morales, 1992: 15. Holotype female (AMNZ); ND, North Cape, Kerr Point.

Geographic distribution (Map p. 200). North Island: ND–North Cape, Kerr Point.

Biology. [Lowland, coastal.] Collected on coastal cliff-top vegetation. Seasonality: December. [Xylem-feeder.] Wing condition: Macropterous.

Reference. Hamilton & Morales, 1992 (biology, distribution, New Zealand, taxonomy).

***Carystoterpa minor* Hamilton & Morales, 1992^E**

Type photograph p. 150.

Carystoterpa minor Hamilton & Morales, 1992: 15. Holotype male (NZAC); BP, Rotorua, Blue Lake.

Geographic distribution (Map p. 200). North Island: BP–Blue Lake (NZAC). CL–Coromandel, E of (NZAC). Great Barrier Island, Okiwi (NZAC). Little Barrier Island, Te Maraeroa [Flat] (Hamilton & Morales, 1992). ND–Kohukohu (Hamilton & Morales, 1992). WI–Longacre (NZAC).

Biology. Lowland, montane (lower). Habitat: Unknown. Seasonality: November–March. [Xylem-feeder.] Wing condition: Macropterous.

Reference. Hamilton & Morales, 1992 (biology, distribution, New Zealand, taxonomy).

***Carystoterpa subtacta* (Walker, 1858)^E**

Ptyelus subtactus Walker, 1858c: 94. Lectotype* female (designated by Hamilton & Morales, 1992; BMNH); type locality unknown.

Carystoterpa subtacta: Hamilton & Morales, 1992: 16.

Geographic distribution (Map p. 200). Offshore Islands: KE–Macauley Island (Hamilton & Morales, 1992).

Biology. Unknown.

References. Metcalf, 1962a: 71 (catalogue, world; as *Ptyelus subtactus*). Hamilton & Morales, 1992 (distribution, New Zealand, taxonomy).

Notes. According to Hamilton & Morales (1992), this species was described from an unspecified number of individuals, without accession numbers, recorded as coming from West Africa. They believed this record to be erroneous because the genus does not occur in that part of the world. Hamilton & Morales' (1992) lectotype designation was based on the only extant specimen from the type series.

***Carystoterpa subvirescens* (Butler, 1874)^E**

Ptyelus subvirescens Butler, 1874: 26. Lectotype* male designated by Hamilton & Morales, 1992; BMNH); "54.4" [= North Island, AK, Auckland] (Hamilton & Morales, 1992).

Aphrophora subvirescens: Butler, 1874: Tab.7, Fig. 9.

Philaenus subvirescens: White, 1879: 215.

Carystoterpa subvirescens: Evans, 1966: 323 (as a junior synonym of *C. fingsens*).

Carystoterpa subvirescens: Hamilton & Morales, 1992: 16 (resurrected from synonymy with *C. fingsens*).

Geographic distribution (Map p. 200). North Island: AK–Auckland (Hamilton & Morales, 1992). ND–Poor Knights Islands (Aorangi (Hamilton & Morales, 1992); Tawhiti Rahi (NZAC)).

Biology. Lowland, coastal. Collected on *Ozothamnus leptophyllus*, *Coprosma*, *Cortaderia toetoe*, *Cyathodes juniperina* [= *Leptecophylla juniperina*] ferns, grasses, regenerating *Metrosideros*, *Hebe*, *Pseudopanax lessonii*, rushes; coastal vegetation in general. Seasonality: November–December. [Xylem-feeder.] Wing condition: Macropterous.

References. Wise, 1977: 71 (checklist, New Zealand; as a synonym of *C. fingsens*). Hamilton & Morales, 1992 (biology, distribution, New Zealand, taxonomy).

***Carystoterpa trimaculata* (Butler, 1874)^E**

Ptyelus trimaculatus Butler, 1874: 26. Lectotype* male (designated by Hamilton & Morales, 1992; BMNH); New Zealand.

Aphrophora trimaculatus: Butler, 1874: Tab.7, Fig. 10.

Philaenus trimaculatus: White, 1879: 215.

Carystoterpa trimaculata: Lallemand, 1936: 264; Evans, 1966: 323 (as a junior synonym of *C. fingsens*).

Carystoterpa trimaculata trimaculata: Lallemand, 1937: 253.

Carystoterpa trimaculata: Hamilton & Morales, 1992: 16 (resurrected from synonymy with *C. fingsens*).

Geographic distribution (Map p. 200). Offshore Islands: TH–Great Island (NZAC) (Castaway Camp (NZAC); South East Bay (NZAC)). South West Island (NZAC).

Biology. Lowland, coastal. Collected on *Meryta [sinclairii]*, *Vitex lucens*. Seasonality: November (mostly)–January. [Xylem-feeder.] Wing condition: Macropterous.

References. Metcalf, 1962a: 554–555 (catalogue, world). Wise, 1977: 71 (checklist, New Zealand; as a synonym of *C. fingsens*). Hamilton & Morales, 1992 (biology, distribution, New Zealand, taxonomy).

Note. Myers' (1924a: 179) record of this species for the Chatham Islands refers to *Carystoterpa tristis*.

***Carystoterpa tristis* (Alfken, 1904)^E**

Ptyelus trimaculatus var. *tristis* Alfken, 1904: 598. Type status and repository unknown. *Aphrophora trimaculata* Butler synonymised with *Ptyelus fingsens* Walker by Evans, 1966: 323.

Ptyelus trimaculatus var. *laetus* Alfken, 1904: 598. Type status and repository unknown. *Aphrophora trimaculata* Butler synonymised with *Ptyelus fingsens* Walker by Evans, 1966: 323.

Carystoterpa trimaculata tristis: Lallemand, 1937: 253.

Carystoterpa trimaculata laeta: Lallemand, 1937: 253.

Carystoterpa tristis: Hamilton & Morales, 1992: 17 (resurrected from synonymy with *C. fingsens*).

Geographic distribution (Map p. 200). Offshore Islands: CH–Chatham Island, several localities (NZAC). Pitt Island, Rangiauria (NZAC). South East Island (NZAC).

Biology. Lowland, coastal. Collected on flowering *Coprosma* (numerous adults and teneral), *Muehlenbeckia australis*, *Plagianthus*, pasture [vegetation]-ferns, sedges; also coastal vegetation in general. [Hostplant: *Coprosma*.] Seasonality: November–January (mostly), February. [Xylem-feeder.] Wing condition: Macropterous.

References. Metcalf, 1962a: 555–556 (catalogue, world; as *Carystoterpa trimaculata tristis*). Evans, 1966 (taxonomy; as a synonym of *C. fingsens*). Wise, 1977: 71 (checklist, New Zealand; as a synonym of *C. fingsens*). Hamilton & Morales, 1992 (biology, distribution, New Zealand, taxonomy).

Notes. A series of twelve possible syntypes, involving specimens of both varieties *tristis* and *laeta*, in the Alfken Collection (Ubersee Museum, Germany), were examined by Hamilton & Morales (1992: 17) but these authors had insufficient evidence that these were in fact part of the type series to designate lectotypes. See also **Note** under *C. trimaculata*.

***Carystoterpa vagans* Hamilton & Morales, 1992^E**

Type photograph p. 150.

Carystoterpa vagans Hamilton & Morales, 1992: 17. Holotype male (NZAC); BP, Mount Te Aroha.

Geographic distribution (Map p. 200). North Island: AK, BP, CL, GB, HB, ND, RI, TK, TO, WA, WI, WN, WO. South Island: BR, DN, FD, KA, MC, NC, NN, SC, SD, SL, WD. Stewart Island.

Biology. Lowland, montane (higher). Collected on *Coprosma parviflora*, *Elatostema rugosum*, ferns (at night), *Geniostoma*, *Griselinia*, *Hebe elliptica*, *Leptocarpus* [= *Apodasmia*], *Leptospermum scoparium*, *Melicytus ramiflorus*, *Metrosideros excelsa*, *Nothofagus fusca*, *Olearia arborescens*, *Populus alba*, *Pseudopanax edgerleyi* [= *Raukaua edgerleyi*], *Senecio minimus*, *Syringa vulgaris*, *Vicia faba*; on various coastal shrubs. Seasonality: October–April. [Xylem-feeder.] Wing condition: Macropterous.

Reference. Hamilton & Morales, 1992 (biology, distribution, New Zealand, taxonomy).

Genus *Philaenus* Stål, 1864^A

Synonymy (see Hamilton, 1979; Hamilton & Morales, 1992).

Geographic distribution. Oriental Region, Holarctic Region; New Zealand (adventive).

Reference. Hamilton & Morales, 1992 (New Zealand, revision).

***Philaenus spumarius* (Linnaeus, 1758)^A**

Synonymy (see Metcalf, 1962a; Hamilton & Morales, 1992).

Common name: Meadow Spittlebug.

Geographic distribution (Map p. 200). North Island: HB, TK, TO, WI, WN. South Island: CO, DN, MC, MK, NC, OL, SC; also “2 localities on the west coast” [=WD?] (Lees, 1993). First New Zealand record: WI, Palmerston North, 1960 (Archibald *et al.*, 1979). Extralimital range: Holarctic Region.

Biology. Lowland to alpine. Found in a wide range of mostly modified, humid habitats, on a wide variety of plants, including *Cirsium arvense*, *Coriaria*, *Daucus carota*, *Hieracium* (occasionally on *H. pilosella*, commonly on *H. caespitosum*, *H. lepidulum*, *H. praealtum*; adults, nymphs), introduced grasses (adults, nymphs), *Lavandula*, *Medicago sativa* crop (adults, nymphs), *Sonchus*, *Trifolium* crop (adults, nymphs); *Aciphylla*, *Celmisia*, *Hebe* (all native hostplants in alpine environments); also common on ornamental plants. Seasonality: October–March. Xylem-feeder. Economic importance: May cause damage to crops, pasture and garden plants by direct feeding or by carrying disease organisms, e.g., it is a known vector of Pierce’s disease of grapevine caused by the bacterium *Xylella fastidiosa*; heavy infestations of spittle masses are also known to cause damage to legumes. Wing condition: Macropterous.

References. Metcalf, 1962a: 317–361 (catalogue, world; as *Philaenus leucophthalmus spumarius*). Hamilton & Morales, 1992 (biology, distribution, New Zealand, taxonomy). Lees, 1993 (biology, colour polymorphism, distribution). Syrett & Smith, 1998 (biology, New Zealand). Yurtsever, 2000, 2002 (colour polymorphism). Redak *et al.*, 2004 (disease vector, epidemiology; *Xylella*).

Notes. *Philaenus spumarius* was introduced in the 1960s – most likely on nursery stock from England (Hamilton & Morales, 1992) – and it has not been recorded from Australia. More information on world distribution, biology, and economic importance may be found in Hamilton (1999a).

Genus *Pseudaphronella* Evans, 1966^E

Pseudaphronella Evans, 1966: 324. Type species: *Aphrophora jactator* White, 1879, by original designation.

Geographic distribution. New Zealand.

Reference. Hamilton & Morales, 1992 (New Zealand, revision).

Note. Evans (1966) and Hamilton & Morales (1992) commented that this genus may be related to the Chilean genus *Pseudaphrophora* Schmidt, 1924, and more distantly, to

Ayllis China, 1952, from Australia and *Neotrephes* Stål, 1866a, from South Africa; suggesting a Gondwanan origin for these genera.

***Pseudaphronella jactator* (White, 1879) ^F**

Aphrophora jactator White, 1879: 214. Syntypes* “ ‘many’ specimens of both sexes without collection data, collected by Captain Broun” (BMNH) (Hamilton & Morales, 1992).

Cercopis jactator: Kirkaldy, 1909a: 28.

Pseudaphronella jactator: Evans, 1966: 324.

Geographic distribution (Map p. 200). North Island: BP, CL, GB, HB, RI, TK, TO, WN, WO.

Biology. Montane, subalpine. Collected on *Blechnum* (in *Nothofagus* forest), *Coprosma*, *Dracophyllum*, *Nothofagus*, *Olearia ilicifolia*; on subalpine scrub vegetation in general. Seasonality: October–March. [Xylem-feeder.] Wing condition: Macropterous.

References. Evans, 1966 (taxonomy). Wise, 1977: 71 (checklist, New Zealand). Hamilton & Morales, 1992 (biology, distribution, New Zealand, taxonomy).

Note. Hamilton & Morales (1992) reported a female from the South Island “west coast”, which may belong to a related undescribed species.

Superfamily CICADOIDEA

Family CICADIDAE

Cicadas

References. Hudson, 1891 (New Zealand, taxonomy), 1893 (New Zealand, nomenclature). Myers, 1921a (New Zealand, revision), 1928b (revision, Samoa). Hudson, 1936 (New Zealand, taxonomy), 1950 (New Zealand, revision). Kato, 1956 (biology, world). Metcalf, 1963a (catalogue, world). Dugdale & Fleming, 1969 (New Zealand, revision; *Amphipsalta*). Dugdale, 1972 (key, genera, New Zealand, revision). Fleming, 1971 (New Zealand, taxonomy; *Maoricicada*), 1973 (New Zealand, revision; *Kikihia cutora*), 1975a (acoustic behaviour, genera, New Zealand), 1975b (biogeography, evolution, New Zealand). Wise, 1977 (checklist, New Zealand). Dugdale & Fleming, 1978 (New Zealand, revision; *Maoricicada*). Fleming, 1984 (New Zealand, revision; *Kikihia*, part). Duffels & Van der Laan, 1985 (catalogue, world). Duffels, 1986 (biogeography, Indo-Pacific). Boulard, 1988 (classification, nomenclature, world). Moulds, 1988 (Australia, taxonomy; *Cicadetta*, *Melampsalta*), 1990 (Australia, identification and field

guide). Moulds & Carver, 1991 (Australia, overview; Cicadoidea). Boulard, 1998 (classification, nomenclature, world). Buckley *et al.*, 2001a, c (evolution, New Zealand; *Maoricicada*). Buckley *et al.*, 2002 (evolution, genera, New Zealand, origin). Simon *et al.*, 2003 (acoustic behaviour, biology, distribution, guide, New Zealand). Arensburger *et al.*, 2004a (evolution, genera, New Zealand, origin), 2004b (evolution; *Kikihia*, in part). Moulds & Cowan, 2004 (Australia, checklist). Larivière, 2005 (checklist, New Zealand). Moulds, 2005a (Australia, classification, phylogeny, world). Larivière *et al.*, 2006 (acoustic behaviour, biology, checklist, distribution, identification guide, New Zealand). Buckley & Simon, 2007 (evolution, New Zealand; *Maoricicada*). Marris, 2007 (New Zealand, popular overview).

Notes. The taxonomy of New Zealand Cicadidae was in a very unsatisfactory state prior to the works of Fleming (mainly 1971, 1973, 1984), Dugdale (1972), and Dugdale & Fleming (1969, 1978). For example, several species were recognised in Palaearctic-Mediterranean genera and contained many undescribed species, or species complexes, and subspecies complexes. Consequently, a great proportion of the literature published before the 1970s contains unreliable records on the nomenclature, taxonomy, biology, and geographic distribution of several New Zealand taxa. Similarly, the works of very early authors (e.g., Stål (1862a), Kirby (1896), Alfken (1904), Distant (1906a)) may not be reliable when considering New Zealand species as these authors did not study the male genitalia nor examine the types. Finally, the literature up to about 1927 also includes many interpretations (and misinterpretations) of the Fabrician species *Tettigonia muta* and *T. cruentata* (e.g., Alfken (1904), Distant (1906a), and also Myers, until the latter author saw the Natural History Museum (BMNH) types in London around 1927). Therefore, most of the information published before the works of Fleming and Dugdale, who have clarified the New Zealand inventory, is not repeated here unless it is for taxa that have not been treated by these authors or for which little other information is available.

Before this catalogue, there was no synonymic checklist or catalogue that recorded the nomenclatural history of New Zealand cicadas in an up-to-date, comprehensive, and accurate manner. The synonymic listings in Metcalf (1963a), Wise (1977), and Duffels & Van der Laan (1985; a supplement to Metcalf 1963a) were only partly useful as they included much of the nomenclatural confusion found in the old literature in the form of numerous citations of little or no nomenclatural significance.

The present catalogue takes a cautious approach towards the listing of synonymic citations and other information on New Zealand taxa, relying mostly on the works

of Fleming & Dugdale and, when available, other more recent publications, in addition to label data associated with authoritatively identified specimens in New Zealand entomological museums and collections. Synonymic citations follow closely Dugdale & Fleming (1969) for *Amphipsalta*; Fleming (1971) for *Maoricicada campbelli*, *M. iolanthe*, and *M. lindsayi*; Dugdale & Fleming (1978) for *M. cassiope* and *M. oromelaena*; Wise (1977) for *Kikihia muta muta*, *K. muta pallida*, *K. rosea*; and Fleming (1984) for *K. ochrina* and *K. subalpina*. The main synonymic citations for other Cicadidae taxa were compiled by the authors.

Subfamily CICADETTINAE

Tribe CICADETTINI

References. Dugdale, 1972 (identification key, New Zealand genera). Moulds, 2005a (classification, phylogeny, subfamily status). Larivière *et al.*, 2006 (identification key, New Zealand genera).

Genus *Amphipsalta* Fleming, 1969^E

Amphipsalta Fleming, in Dugdale & Fleming, 1969: 932.
Type species: *Cicada zelandica* Boisduval, 1835, by original designation.

Common name: Clapping Cicadas.

Geographic distribution. New Zealand.

References. Dugdale & Fleming, 1969 (revision). Dugdale, 1972 (distribution, species list, taxonomy). Fleming, 1975a (song). Wise, 1977: 71 (checklist, New Zealand). Duffels & Van der Laan, 1985: 294–296 (catalogue, world). Larivière *et al.*, 2006 (guide to species, identification).

Amphipsalta cingulata (Fabricius, 1775)^E

Tettigonia cingulata Fabricius, 1775: 680. Lectotype* male (designated by Dugdale & Fleming, 1969; BMNH); “Nova Zelandia” = [ND] Bay of Islands (Dugdale & Fleming, 1969).

Melampsalta cingulata: Myers, 1921a: 241 (part).

Cicadetta cingulata: Metcalf, 1963a: 302 (part).

Amphipsalta cingulata: Dugdale & Fleming, 1969: 943.

Common name: Clapping Cicada.

Geographic distribution (Map p. 209). North Island: AK, BP, CL, HB, ND, TK, TO, WA, WI, WN, WO. Off-shore Islands: TH.

Biology. Lowland, mostly coastal. Collected in coastal scrub (e.g., under *Muehlenbeckia*), lakeshore or forest-margin scrub rather than forests; also in gardens, in orchards

(e.g., kiwifruit), on introduced trees, lamp posts and buildings; taken once from *Meryta* roots. Seasonality: October–June. Solo singer (usually). Xylem-feeder. Wing condition: Submacropterous. Economic importance: After *A. zelandica*, this is the second most important pest species in coastal kiwifruit orchards (BP).

References. Myers, 1929b (taxonomy; as *Melampsalta cingulata*). Hudson, 1950 (taxonomy; as *Melampsalta cingulata*). Metcalf, 1963a: 302–305 (catalogue, world; as *Cicadetta cingulata*). Dugdale & Fleming, 1969 (biology, distribution, song, taxonomy). Dugdale, 1972 (distribution, nomenclature). Fleming, 1975b (biology, distribution). Wise, 1977: 72 (checklist, New Zealand). Duffels & Van der Laan, 1985: 294–295 (catalogue, world). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand). Logan & Connolly, 2005 (biology, economic importance, nymphal exuviae).

Notes. Most nomenclatural combinations and information associated with *Amphipsalta cingulata* (Fabricius) up to about 1969 may also apply, at least in part, to *Amphipsalta strepitans* or *Amphipsalta zelandica*. *Amphipsalta cingulata* has also been erroneously recorded for New Zealand by early authors under other names such as *Cicada mendosa* Walker (West Africa), *C. indivulsa* Walker, or *C. flexicosta* Walker (Australia). Additional information on distribution and biology can be found in works cited under **References**.

Amphipsalta strepitans (Kirkaldy, 1909)^E

Type photograph p. 164.

Cicada cingulata var. *obscura* Hudson, 1891: 51. Lectotype female (designated by Fleming & Ordish, 1966; MONZ, Hudson Collection); KA, Kekerangu [=Kekerengu], Dee River [=Dee Stream]. Preoccupied.

Melampsalta obscura: Hutton, 1904: 224.

Cicadetta strepitans Kirkaldy, 1909a: 28. Replacement name for *Cicada cingulata* var. *obscura*.

Melampsalta strepitans: Myers, 1921a: 241.

Amphipsalta strepitans: Dugdale & Fleming, 1969: 949.

Common name: Chirping Cicada.

Geographic distribution (Map p. 209). North Island: HB, WA, WN. South Island: CO, KA, MB, MC, MK, NC, NN, SC, SD.

Biology. Lowland (often coastal) to montane. Collected in coastal or riparian habitats, on rock-faces and in shrubland (e.g., *Discaria*, *Ozothamnus*) but not forest; on cliff faces and screes; also in gardens, on *Phormium* and on various shrubs. Seasonality: October–March. Observed singing on rock faces during the day; [solo-singer]. Xylem-feeder. Wing condition: Submacropterous.

References. Myers, 1929b (taxonomy; as *Melampsalta strepitans*). Hudson, 1950 (taxonomy; as *Melampsalta*

strepitans). Metcalf, 1963a: 382–383 (catalogue, world; as *Cicadetta strepitans*). Dugdale & Fleming, 1969 (biology, distribution, song, taxonomy). Dugdale, 1972 (distribution, nomenclature). Fleming, 1975b (biology). Wise, 1977: 72 (checklist, New Zealand). Duffels & Van der Laan, 1985: 295–296 (catalogue, world). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand).

Notes. The specific name *strepitans* was placed on the Official List of Specific Names in Zoology by Melville (1979). The lectotype is a female, not a male as stated in Fleming & Ordish (1966) (J. S. Dugdale, personal communication based on type examination). Additional information on distribution and biology can be found in works cited under **References**. See also **Notes** under *A. cingulata*.

***Amphipsalta zelandica* (Boisduval, 1835)^E**

Cicada zelandica Boisduval, 1835: 611, Atlas pl. 10, fig. 6. Holotype* female (MNHP; presumed lost or destroyed); “Nouvelle-Zélande” = [NN] Tasman Bay (Dugdale & Fleming, 1969).

Melampsalta cingulata: Myers, 1921a: 241 (part).

Amphipsalta zelandica: Dugdale & Fleming, 1969: 937.

Common names: Chorus Cicada, Kihikihi wa wa.

Geographic distribution (Map p. 209). North Island: AK, BP, CL, GB, HB, ND, TK, TO, WA, WI, WN, WO. South Island: BR, DN, FD, KA, MB, MC, NC, NN, OL, SC, SD, SL, WD. Stewart Island. Offshore Islands: TH.

Biology. Lowland (mostly), montane. Collected in indigenous forests (podocarp, broadleaf, *Nothofagus*, mixed), exotic forests (e.g., *Eucalyptus*), shelterbelts, gardens, orchards (e.g., kiwifruit); on various trees and shrubs; also on lampposts and buildings. Seasonality: November–August, mostly late January–March. Emerging in large numbers at times, e.g., in March. Chorus singer, diurnal (singing at dawn) and nocturnal, e.g., sings or claps in unison on warm humid nights. Xylem-feeder. Wing condition: Submacropterous. Attracted to artificial lights. Economic importance: Main cicada pest species of New Zealand kiwifruit orchards (vines damaged by egg-laying, workers disrupted by song and repeated contact with flying cicadas).

References. Metcalf, 1963a: 302–305 (catalogue, world; in the synonymy of *Cicadetta cingulata*). Dugdale & Fleming, 1969 (biology, distribution, song, taxonomy). Dugdale, 1972 (distribution, nomenclature). Wise, 1977: 72 (checklist, New Zealand). Duffels & Van der Laan, 1985: 296 (catalogue, world). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand). Logan & Connolly, 2005 (biology, economic importance, nymphal exuviae).

Notes. The Maori name “Kihikihi wa wa” was wrongly applied to *Amphipsalta cingulata* by Scott & Emberson (1999). Additional information on distribution and biology can be found in works cited under **References**. See also **Notes** under *A. cingulata*.

Genus *Kikihia* Dugdale, 1972^N

Kikihia Dugdale, 1972: 874. Type species: *Cicada muta* var. *sub-alpina* Hudson, 1891, by original designation.

Common name: Kikihi.

Geographic distribution. Australia (Norfolk Island only), New Zealand (main islands, Kermadec Islands, Chatham Islands).

References. Dugdale, 1972 (distribution, New Zealand, species list, taxonomy). Fleming, 1973 (biology, distribution, New Zealand, song, taxonomy; *K. cutora*), 1975a (song). Wise, 1977: 73 (checklist, New Zealand). Fleming, 1984 (New Zealand, revision (part.)). Duffels & Van der Laan, 1985: 303–307 (catalogue, world). Arensburger *et al.*, 2004b (phylogeny; except *K. dugdalei*, *K. laneorum*, *K. muta*). Moulds & Cowan, 2004 (Australia, checklist). Larivière *et al.*, 2006 (guide to New Zealand species, identification).

Notes. The genus *Kikihia* is currently known from 16 taxa in New Zealand (13 species and three subspecies) and a single species from Norfolk Island (*K. convicta* (Distant)). Fleming (1973, 1984) began revising *Kikihia* but only completed the treatment of seven species, the “vivid green foliage cicadas” *sensu* Fleming (*K. cutora*, *K. dugdalei*, *K. horologium*, *K. laneorum*, *K. ochrina*, *K. paxillulata*, *K. subalpina*), before his death in 1987. This left six species to be revised: the “North Island shade singers” *sensu* Fleming (*K. cauta*, *K. scutellaris*) and the “grass and scrub cicadas” *sensu* Fleming (*K. angusta*, *K. longula*, *K. muta*, *K. rosea*). There remained the possibility of discovering several new undescribed taxa. Since Fleming’s work, no one has published on the taxonomy of this genus which, once revised, may be the most diverse cicada genus in New Zealand, according to Arensburger *et al.* (2004b), with an estimated 28 species in all.

***Kikihia angusta* (Walker, 1850)^E**

Cicada angusta Walker, 1850: 174. Type status uncertain, apparently described from one specimen by Walker (1850) “a. — ? From Earl’s collection.” (BMNH, probably); type locality probably Waikouaiti (DN). See also **Notes**.

Melampsalta angusta: White, 1879: 214.

Melampsalta muta angusta: Kirby, 1896: 456.

Cicadetta angusta: Kirkaldy, 1909a: 28.

Kikihia angusta: Dugdale, 1972: 875.

Common name: Tussock Cicada.

Geographic distribution (Map p. 209). South Island: BR, CO, DN, FD, MB, MC, MK, NC, OL, SC, SL. Stewart Island.

Biology. Lowland to subalpine. Collected mostly in tussock grasslands (e.g., snow tussock); in *Aciphylla* habitats; also recorded on *Dactylis glomerata* and *Medicago sativa*. Seasonality: January–March. Xylem-feeder. Wing condition: Submacropterous.

References. Hudson, 1950 (taxonomy; as *Melampsalta muta* var. *angusta*). Metcalf, 1963a: 357–358 (catalogue, world; as *Cicadetta muta angusta*). Dugdale, 1972 (distribution, nomenclature). Fleming, 1975b (biology, distribution), 1975c (biology). Wise, 1977: 73 (checklist, New Zealand). Duffels & Van der Laan, 1985: 303 (catalogue, world). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand).

Notes. The British Museum’s collection register for Percy Earl are 45/30, 45/50, 45/93; most of these specimens were collected around Waikouaiti north of Dunedin (J. S. Dugdale, personal communication). This species may have been recorded under other names, at least in part, in the early literature (e.g., *Melampsalta cruentata* – Myers, 1921a, *M. muta muta* – Myers, 1926a, *M. muta* – Myers, 1927). Additional information on distribution and biology can be found in works cited under **References**.

Kikihia cauta (Myers, 1921) ^E

Melampsalta cauta Myers, 1921a: 242. Syntypes* (MONZ, Hudson Collection); “[TO] Ohakune; [WN] Karori, Day’s Bay, Wellington” (Myers, 1921a). See also **Notes**.

Cicadetta cauta: Metcalf, 1963a: 301.

Kikihia cauta: Dugdale, 1972: 875.

Common name: Greater Bronze Cicada.

Geographic distribution (Map p. 210). North Island: AK, BP, CL, ND, RI, TO, WN.

Biology. Lowland (mostly), montane (lower). Found in forests, often in hilly regions; on various trees and shrubs (often high in the canopy), but apparently not on *Melicytus ramiflorus* in areas of sympatry with *K. scutellaris*; also collected on tree trunks and logs. Seasonality: November–March. Shade-singer (singing in dense forest rather than in full sun). Xylem-feeder. Wing condition: Submacropterous.

References. Myers, 1929b (taxonomy; as *Melampsalta cauta*). Hudson, 1950 (taxonomy; as *Melampsalta cauta*). Metcalf, 1963a: 301 (catalogue, world; as *Cicadetta cauta*). Dugdale, 1972 (distribution, nomenclature). Fleming, 1975b (biology, distribution). Wise, 1977: 73 (checklist, New Zealand). Duffels & Van der Laan, 1985: 303 (catalogue, world). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand).

Notes. MONZ has Hudson specimens of *Melampsalta cauta* collected prior to 1921 from the type localities; they may be part of the type series. Additional information on distribution and biology can be found in works cited under **References**.

Kikihia cutora cumberi Fleming, 1973 ^E

Type photograph p. 164.

Kikihia cutora cumberi Fleming, 1973: 324. Holotype male (MONZ); TO, Mangatawai Stream, S[tate] H[ighway] 1.

Common name: Southern Snoring Cicada.

Geographic distribution (Map p. 210). North Island: AK, BP, CL, GB, HB, TK, TO, WA, WI, WN, WO.

Biology. Lowland to subalpine. Collected in similar habitat to that of *K. cutora cutora*, that is, foliage of various broadleaf trees and shrubs, coastal scrub, and grass but extending to the subalpine scrub vegetation (e.g., *Ozothamnus leptophyllus*, *Hebe*, *Podocarpus nivalis*). Seasonality: November–June, mostly February–April; rarely emerging before mid-December. Xylem-feeder. Wing condition: Submacropterous.

References. Fleming, 1973 (biology, distribution, song, taxonomy). Wise, 1977: 73 (checklist, New Zealand). Fleming, 1984 (distribution, taxonomy). Duffels & Van der Laan, 1985: 304 (catalogue, world). Lane, 1995 (hybridization). Simon *et al.*, 2003 (biology, distribution). Larivière, 2005 (checklist, New Zealand).

Note. Additional information on distribution and biology can be found in works cited under **References**.

Kikihia cutora cutora (Walker, 1850) ^E

Cicada cutora Walker, 1850: 172. Holotype* female (BMNH); type locality undetermined.

Melampsalta cuterae [sic]: Kirby, 1896: 456.

Melampsalta cutora: Hutton, 1898b: 181.

Cicadetta cutora: Kirkaldy, 1909a: 28.

Melampsalta muta cutora: Myers, 1926a: 75.

Cicadetta muta var. *cutora*: Metcalf, 1963a: 359.

Kikihia cutora: Dugdale, 1972: 875.

Kikihia cutora cutora: Fleming, 1973: 322.

Common names: Northern Snoring Cicada.

Geographic distribution (Map p. 210). North Island: AK, CL, ND, WO.

Biology. Lowland, mostly coastal. Found mostly on the foliage of broadleaf shrubs and trees, e.g., *Coprosma repens*, *Hebe*, *Leptospermum scoparium*, *Metrosideros excelsa*, *Myoporum laetum*, *Pittosporum*; on vines, especially *Muehlenbeckia*, also *Convolvulus* or *Cahystegia [soldanella]*, and locally on the grass *Pennisetum clandestinum*; also collected on *Agathis australis*, general coastal scrub vegetation, *Phormium* (in swamp), steep *Cortaderia* swards.

Seasonality: Throughout the year, mostly January–March (rarely June–August). Xylem-feeder. Wing condition: Submacropterous.

References. Myers, 1929b (taxonomy; as *Melampsalta muta* var. *cutora*). Hudson, 1950 (taxonomy; as *Melampsalta muta* var. *cutora*). Metcalf, 1963a: 359–360 (catalogue, world; as *Cicadetta muta cutora*). Dugdale, 1972 (distribution, nomenclature; as *K. cutora*). Fleming, 1973 (biology, distribution, song, taxonomy). Wise, 1977: 73 (checklist, New Zealand; as *K. cutora* and *K. cutora cutora*). Fleming, 1984 (distribution, taxonomy). Duffels & Van der Laan, 1985: 304 (catalogue, world). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand).

Notes. Various applications of the epithet *subalpina* made by Myers prior to 1927, as subspecies or full species, to *K. cutora* (including Kermadec Islands populations now known as *K. cutora exulis*) should be disregarded because Myers then had not seen Walker’s type of *Cicada cutora* (BMNH). The history of these name applications, as well as the respective views of Hudson and Myers about what should have then been regarded as true “*cutora*”, have been reported in great detail by Fleming (1973), including Hudson’s (1950) concept that North Island specimens of var. *cutora* (*sensu* Myers) could be hybrids (*Melampsalta muta* × *M. ochrina*). Additional information on distribution and biology can be found in works cited under **References**.

***Kikihia cutora exulis* (Hudson, 1950)^E**

Type photograph p. 165.

Melampsalta exulis Hudson, 1950: 137. Lectotype male (designated by Fleming & Ordish, 1966; MONZ); Kermadec Islands.

Cicadetta exulis: Metcalf, 1963a: 312.

Kikihia exulis: Dugdale, 1972: 875.

Kikihia cutora exulis: Fleming, 1973: 326.

Common name: Kermadec Cicada.

Geographic distribution (Map p. 210). Offshore Islands: KE (Dugdale, 1972)—Raoul Island (Fleming, 1973, 1984; Arensburger *et al.*, 2004b).

Biology. Lowland, coastal. Collected on coastal shrubs and trees, including *Myoporum*. Seasonality: August–March. Xylem-feeder. Wing condition: Submacropterous with forewings proportionately longer than in most *Kikihia* except *K. convicta* (Norfolk Island), *K. longula*, and *K. scutellaris*.

References. Hudson, 1950 (taxonomy; as *Melampsalta exulis*). Metcalf, 1963a: 312 (catalogue, world; as *Cicadetta exulis*). Dugdale, 1972 (distribution, nomenclature; as *K. exulis*). Fleming, 1973 (biology, distribution, taxonomy). Wise, 1977: 73 (checklist, New Zealand). Fleming, 1984: 197 (distribution, taxonomy). Duffels & Van der Laan,

1985: 304 (catalogue, world). Arensburger *et al.*, 2004b (distribution). Simon *et al.*, 2003 (biology, distribution). Larivière, 2005 (checklist, New Zealand).

Notes. When Hudson (1950) named *Melampsalta exulis*, he stated that *M. muta* var. *subalpina* “also occurs on the Kermadecs”, but it is recognised that only *K. cutora exulis* occurs there. See also **Notes** under *K. cutora cutora*. Additional information on distribution and biology can be found in works cited under **References**.

***Kikihia dugdalei* Fleming, 1984^E**

Type photograph p. 165.

Kikihia dugdalei Fleming, 1984: 198. Holotype male (NZAC); BP, Rotorua, Whakarewarewa.

Common name: Dugdale’s Cicada.

Geographic distribution (Map p. 210). North Island: AK, BP, GB, ND, TO, WN, WO.

Biology. Lowland. Inhabits native forest margins (including cutover and regenerating forests) and scrublands where adults are almost confined to the shrubs *Cyathodes juniperina* [= *Leptecophylla juniperina*] and *C. fasciculata* [= *Leucopogon fasciculatus*] where males sing, mating occurs, and females probably lay eggs; adults also reported singing on *Leptospermum scoparium*, *Kunzea ericoides*, *Escallonia*, *Sambucus* ‘Aurea’, and *Teline monspessulana*; appears not to favour introduced trees such as *Populus* and *Quercus* which apparently attract its close relative *K. ochrina*, nor *Coprosma*. Seasonality: late September–February; emerging about four weeks earlier than *K. ochrina*. Xylem-feeder. Wing condition: Submacropterous.

References. Fleming, 1975b (biology; as *Kikihia* sp. V), 1984 (biology, distribution, song, taxonomy). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand).

Note. Additional information on distribution and biology can be found in works cited under **References**.

***Kikihia horologium* Fleming, 1984^E**

Type photograph p. 166.

Cicada muta var. *flavescens* Hudson, 1891: 52. Holotype female (MONZ, Hudson Collection); KA, Mount Tapuaewaeonuku [= Tapuae-o-Uenuku] lower slopes. Pre-occupied. [Stated to be a nomen dubium.]

Melampsalta muta flavescens: Kirby, 1896: 456.

Melampsalta flavescens: Hutton, 1904: 224.

Melampsalta muta var. *flavescens*: Hudson, 1950: 139.

Cicadetta muta flavescens: Metcalf, 1963a: 360.

Kikihia horologium Fleming, 1984: 199. Replacement name for *Cicada muta* var. *flavescens*. Holotype male (MONZ); MK, Kea Point Track, Mount Cook National Park.

Common name: Clock Cicada.

Geographic distribution (Map p. 210). South Island: BR, KA, MB, MC, MK, NC, NN, WD.

Biology. Montane (upper), subalpine. Found on subalpine scrub vegetation (e.g., *Aciphylla*, *Ozothamnus*, *Hebe* (a common singing station)), and below the tree line in habitats such as scree, riverbeds, and revegetating landslide areas. Seasonality: November–April, mostly January–February, less abundant in March. Xylem-feeder. Wing condition: Submacropterous.

References. Hudson, 1950 (taxonomy; as *Melampsalta muta* var. *flavescens*). Fleming, 1975b (biology; as *Kikihia* sp. 7), 1984 (biology, distribution, song, taxonomy). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand).

Notes. Fleming (1984) judged the female holotype of *Cicada muta* var. *flavescens* to be taxonomically inadequate, hence the designation of new type material to establish the new replacement name *Kikihia horologium*. For further explanation see *Recommendation 60A of the International Code of Zoological Nomenclature* (International Commission on Zoological Nomenclature, 1999). From 1891 to 1950, Hudson and Myers included this species within their concept of “*Melampsalta muta* var. *subalpina*”. According to Fleming (1984), *K. subalpina* and *K. horologium* can be sympatric in the northern and central South Island subalpine areas, which may explain why they have long been regarded as mere varieties of the morphologically highly variable species *Melampsalta* (or *Cicada*) *muta* (Fabricius). Additional information on distribution and biology can be found in works cited under **References**.

***Kikihia laneorum* Fleming, 1984^E**

Type photograph p. 166.

Kikihia laneorum Fleming, 1984: 195. Holotype male (MONZ): TO, Opepe Historical Reserve, Taupo-Napier Highway.

Common name: Lanes’ Cicada.

Geographic distribution (Map p. 210). North Island: AK, CL, GB, RI, TK, TO, WN.

Biology. Lowland (often coastal) to lower montane. Found in forest and associated tall *Leptospermum* shrubland, mostly in tall podocarp-broadleaf or beech-dominated forest; sings predominantly in canopy, less so on understorey trees in lightwells and forest margins (J. S. Dugdale, personal communication). Seasonality: October–June, mostly December–March. Shade-singer (mostly). Xylem-feeder. Wing condition: Submacropterous.

References. Fleming, 1975b (taxonomy; as *Kikihia* sp. L), 1984 (biology, distribution, song, taxonomy). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand).

Note. Additional information on distribution and biology can be found in works cited under **References**.

***Kikihia longula* (Hudson, 1950)^E**

Type photograph p. 167.

Melampsalta muta var. *longula* Hudson, 1950: 139. Lectotype male (designated by Fleming & Ordish, 1966; CMNZ); CH, Pitt Island.

Kikihia longula: Dugdale, 1972: 875; Wise, 1977: 73.

Kikihia muta longula: Fleming, 1973: 316.

Common name: Chatham’s Cicada.

Geographic distribution (Map p. 210). Offshore Islands: CH–Chatham, Pitt, Mangere Islands: several sites (NZAC).

Biology. Lowland (coastal and inland). In pasture, roadsides, coastal shrub/grasslands including dunes; singing stations on vegetation in sun, also (Pitt Island) on sunny trunks or large branches (J. S. Dugdale, personal communication). Seasonality: November–February, mostly January–February. Xylem-feeder. Wing condition: Submacropterous with forewings proportionately longer than most *Kikihia* except *K. convicta* (Norfolk Island), *K. cutora exulis*, and *K. scutellaris*.

References. Hudson, 1950 (taxonomy; as *Melampsalta muta* var. *longula*). Metcalf, 1963a: 360 (catalogue, world; as *Cicadetta muta longula*). Dugdale, 1972 (distribution, nomenclature). Fleming, 1973 (distribution). Wise, 1977: 73 (checklist, New Zealand). Duffels & Van der Laan, 1985: 304–305 (catalogue, world). Arensburger *et al.*, 2004b (distribution). Simon *et al.*, 2003 (biology, distribution). Larivière, 2005 (checklist, New Zealand).

Notes. This species may have been recorded from the Chatham Islands under other names such as *Melampsalta cruentata* – Hutton, 1898a, *M. muta* var. *subalpina* – Kirkaldy, 1909a, *M. muta* var. *muta* – Myers, 1929b. Additional information on distribution and biology can be found in works cited under **References**.

***Kikihia muta muta* (Fabricius, 1775)^E**

Tettigonia muta Fabricius, 1775: 681. Holotype* female (BMNH) (Simon *et al.*, 2003); [SD] Ship Cove (Simon *et al.*, 2003).

Cicada muta: Goeze, 1778: 150.

Cicada bilinea Walker, 1858a: 34. Type status uncertain (presumed repository BMNH); Walker’s original description based on a female specimen “a. New Zealand. From Mr. Earl’s collection.” Synonymised by Stål, 1862a: 484.

Melampsalta muta: Stål, 1862a: 484.

Melampsalta muta var. *muta*: Kirby, 1896: 455.

Cicadetta muta: Kirkaldy, 1909a: 27 (part).

Melampsalta fuliginosa Myers, 1921a: 245. Holotype female (MONZ, Hudson Collection); WN, Wellington. Synonymised by Hudson, 1950: 141.

Kikihia muta: Dugdale, 1972: 875.

Common names: Variable Cicada (adults), Kihikihi kai (nymphs).

Geographic distribution (Map p. 210). North Island: RI, TK, WA, WI, WN. South Island: BR, DN, KA, MB, MC, NC, NN, OL, SD, WD.

Biology. Lowland to subalpine. Collected mostly on monocots, e.g., *Carex*, grasses (including pasture or coastal sand dune grasses) and *Phormium*, often in marshy or humid environments; also occasionally collected on various low herbage, sometimes on shrubs. Seasonality: October–April, mostly December–February. Xylem-feeder. Wing condition: Submacropterous.

References. Myers, 1929b (taxonomy; as *Melampsalta muta* var. *muta*, *M. fuliginosa*). Hudson, 1950 (taxonomy; as *Melampsalta fuliginosa*). Metcalf, 1963a: 360–362 (catalogue, world; as *Cicadetta muta muta*). Dugdale, 1972 (distribution, nomenclature). Wise, 1977: 74 (checklist, New Zealand). Duffels & Van der Laan, 1985: 305 (catalogue, world; as *Kikihia muta*). Simon *et al.*, 2003 (biology, distribution). Larivière, 2005 (checklist, New Zealand).

Notes. This taxon has been erroneously recorded in the early literature under the specific name *cruentata*. Arensburger *et al.* (2004b) reported that *K. muta* appears to form a complex of several species and/or subspecies. Consequently, information presented here for *K. muta* and its subspecies may be less reliable than for other *Kikihia* taxa. Simon *et al.* (2003) cited “Ship Cove” as the type locality based on notes by Fleming and on advice by Dugdale as being the most likely site (J. S. Dugdale, personal communication). Additional information on distribution and biology can be found in works cited under **References**.

Kikihia muta pallida (Hudson, 1950)^E

Type photograph p. 167.

Melampsalta muta var. *pallida* Hudson, 1950: 139. Lectotype male (designated by Fleming & Ordish, 1966; MONZ, Hudson Collection); MK, Sealy Range, Mount Cook.

Cicadetta muta var. *pallida*: Metcalf, 1963a: 362.

Melampsalta muta pallida: Fleming & Ordish, 1966: 199.

Kikihia muta pallida: Wise, 1977: 74.

Common name: None; taxonomic status dubious (see **Note**).

Geographic distribution (Map p. 211). North Island: WN–Mount Holdsworth (Hudson, 1950). South Island: CO–Mount Ida (Hudson, 1950). MC–Cass (Hudson, 1950). MK–Mount Cook (Hudson, 1950). OL–Ben Mohr [=Ben More] (Hudson, 1950).

Biology. Montane, subalpine. [Tussock and shrubland.] Seasonality: December, January, February (mostly). Xylem-feeder. Wing condition: Submacropterous.

References. Hudson, 1950 (taxonomy; as *Melampsalta muta* var. *pallida*). Metcalf, 1963a: 362 (catalogue, world; as *Cicadetta muta pallida*). Wise, 1977: 74 (checklist, New

Zealand). Duffels & Van der Laan, 1985: 305 (catalogue, world). Larivière, 2005 (checklist, New Zealand).

Note. This taxon may be conspecific with *Kikihia angusta*.

Kikihia ochrina (Walker, 1858)^E

Cicada ochrina Walker, 1858a: 34. Holotype* apparently male (BMNH); New Zealand = AK, Auckland (Fleming, 1984).

Cicada aprilina Hudson, 1891: 53. Lectotype male (designated by Fleming & Ordish, 1966; MONZ, Hudson Collection); WN, Wellington Botanical Gardens. Synonymised by Myers, 1927: 687.

Cicadetta ochrina: Kirkaldy, 1909a: 28.

Melampsalta ochrina: Myers, 1927: 687.

Kikihia ochrina: Dugdale, 1972: 875.

Common name: April Green Cicada.

Geographic distribution (Map p. 211). North Island: AK, BP, ND, TK, TO, WN. South Island: MC–Christchurch (probably introduced; Hill *et al.*, 2005). Off-shore Islands: TH (unconfirmed).

Biology. Lowland, montane (lower). Collected on a wide range of native broadleaf shrubs and trees, usually at the forest margin, e.g., on *Coprosma*, *Hebe*, *Melicytus*, *Myoporum*, *Pseudopanax*, which are commonly used as singing stations, as well as on some introduced trees and shrubs, and in kiwifruit orchards. Hostplants: *Melicytus ramiflorus* and other native trees and shrubs. Seasonality: October–July, mostly February–April; emerging about four weeks later than *K. dugdalei*. Xylem-feeder. Wing condition: Submacropterous.

References. Myers, 1929b (taxonomy; as *Melampsalta ochrina*). Hudson, 1950 (taxonomy; as *Melampsalta ochrina*). Metcalf, 1963a: 364–365 (catalogue, world; as *Cicadetta ochrina*). Dugdale, 1972 (distribution, nomenclature). Fleming, 1973 (taxonomy; as *Cicada ochrina*), 1975b (biology, song). Wise, 1977: 74 (checklist, New Zealand). Fleming, 1984 (biology, distribution, song, taxonomy). Duffels & Van der Laan, 1985: 305–306 (catalogue, world). Hill *et al.*, 2005 (biology, distribution). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand). Logan & Connolly, 2005 (biology, nymphal exuviae).

Notes. According to Fleming (1984), the suspected occurrence of this species on the Three Kings and other outlying islands needs confirmation. This taxon may be closely related to *K. dugdalei*. Additional information on distribution and biology can be found in works cited under **References**. See also **Biology** under *K. dugdalei*.

***Kikihia paxillulæ* Fleming, 1984**^E

Type photograph p. 168.

Kikihia paxillulæ Fleming, 1984: 201. Holotype male (MONZ); KA, Charwell Forks School.

Common name: Peg's Cicada.

Geographic distribution (Map p. 211). South Island: KA, NC–Coldstream, N of Lower Wairau [*sic*] Bridge [=Hawkswood Stream, lower Waiau Valley] (NZAC).

Biology. [Lowland, montane (lower).] Collected on grasses (including long pasture grass), herbs, and shrubs. Seasonality: December–March. Xylem-feeder. Wing condition: Submacropterous.

References. Fleming, 1984 (biology, distribution, song, taxonomy). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand).

Notes. Knuckle Hill, Westhaven Inlet (NN) specimens in NZAC probably belong to an undescribed taxon. Additional information on distribution and biology can be found in works cited under **References**.

***Kikihia rosea* (Walker, 1850)**^E

Cicada rosea Walker, 1850: 220. Syntypes* status uncertain (BMNH); Walker's original description indicates that the species is based on two specimens, "a, b. New Zealand. From Mr. Earl's collection."; Simon *et al.* (2003) list the type [=syntypes] as collected by Percy Earl in 1840s probably near Waikouaiti Whaling Station [DN].

Melampsalta rosea: Stål, 1862a: 484.

Cicada muta var. *cinerescens* Hudson, 1891: 52. Type status uncertain (type or syntypes could not be found by Fleming & Ordish (1966) in Hudson's collection). Synonymised by Kirkaldy, 1909a: 28.

Cicadetta rosea: Kirkaldy, 1909a: 28.

Kikihia rosea: Dugdale, 1972: 875.

Common names: Pink Cicada, Murihiku Cicada.

Geographic distribution (Map p. 211). South Island: CO, DN, FD, MC, MK, OL, SL, WD. Stewart Island.

Biology. Lowland (often coastal) to subalpine. Collected on grass (including roadside grass), in *Hebe-Dacrydium* [=Halocarpus] bog, on *Leptospermum*, *Olearia*, scrub vegetation, *Senecio*, tussock; also on tree line vegetation. Seasonality: November–April, mostly January–February. Xylem-feeder. Wing condition: Submacropterous.

References. Metcalf, 1963a: 360–362 (catalogue, world; synonymy of *Cicadetta muta muta*). Dugdale, 1972 (distribution, nomenclature). Wise, 1977: 74 (checklist, New Zealand). Duffels & Van der Laan, 1985: 306 (catalogue, world). Simon *et al.*, 2003 (distribution). Larivière, 2005 (checklist, New Zealand).

Notes. This taxon has been variously recorded under other names in the past, in part or in error (e.g., *Melampsalta*

angusta – White, 1879, *Melampsalta cruentata* – Hutton, 1898b, *Melampsalta muta* var. *muta* – Myers, 1926a, *Melampsalta muta* – Myers, 1927, *Cicadetta muta* var. *muta* – Metcalf, 1963a). Fleming referred to this species informally as Murihiku Cicada, as he informally used the Maori name for the region (J. S. Dugdale, personal communication); this common name is retained here. Additional information on distribution and biology can be found in works cited under **References**.

***Kikihia scutellaris* (Walker, 1850)**^E

Cicada scutellaris Walker, 1850: 150. Holotype* apparently male (Kirby, 1896) (presumed repository BMNH); "a. New Zealand. From Mr Earl's collection." (Walker, 1850: 150).

Melampsalta scutellaris: Stål, 1862a: 484.

Cicada tristis Hudson, 1891: 52. Lectotype male (NZAC; designated by Fleming & Ordish, 1966: 198); WN, Karori. Synonymised by Distant, 1906a: 172.

Cicadetta scutellaris: Alfken, 1904: 582.

Kikihia scutellaris: Dugdale, 1972: 875.

Common name: Lesser Bronze Cicada.

Geographic distribution (Map p. 211). North Island: AK, BP, CL, HB, TK, TO, WA, WI, WN. South Island: MB (Hill *et al.*, 2005), SD.

Biology. Lowland (often coastal), montane (lower). Found in forests, almost exclusively on *Melicytus ramiflorus*. Males also singing from the canopy of kiwifruit in orchards. Shade-singer (singing in dense forest rather than in full sun). Seasonality: October–April, mostly January–February. Xylem-feeder. Wing condition: Submacropterous with forewings proportionately longer than in most *Kikihia* except *K. convicta* (Norfolk Island), *K. cutora exulis*, *K. longula*. Attracted to artificial lights.

References. Myers, 1929b (taxonomy; as *Melampsalta scutellaris*). Hudson, 1950 (taxonomy; as *Melampsalta scutellaris*). Metcalf, 1963a: 375–376 (catalogue, world; as *Cicadetta scutellaris*). Dugdale, 1972 (distribution, nomenclature). Fleming, 1975b (biology, distribution). Wise, 1977: 74 (checklist, New Zealand). Duffels & Van der Laan, 1985: 306 (catalogue, world). Simon *et al.*, 2003 (biology, distribution, song). Hill *et al.*, 2005 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand). Logan & Connolly, 2005 (biology, nymphal exuviae).

Notes. The holotype of *Cicada scutellaris* would be from the first part of Percy Earl's sojourn in New Zealand (see Andrews (1986) for details of Earl's activities in New Zealand from 1842 to 1844) and joins other insect specimens with an obvious Wellington or Hutt Valley provenance (J. S. Dugdale, personal communication). *Kikihia scutellaris* was not known from the South Island prior to the Picton–Wellington rail-ferry service. Metcalf (1963a) cited *Cicada*

arche Walker, described from Australia as a synonym of *scutellaris* but, as already established by Myers (1921a: 248), the two taxa are not conspecific. Additional information on distribution and biology can be found in works cited under **References**. See also **Biology** under *K. cauta*.

Kikihia subalpina (Hudson, 1891)^E

Type photograph p. 168.

Cicada muta var. *sub-alpina* Hudson, 1891: 52. Lectotype female (designated by Fleming & Ordish, 1966; MONZ, Hudson Collection); WN, Karori, Wellington.

Cicada muta var. *rufescens* Hudson, 1891: 52. Lectotype male (designated by Fleming & Ordish, 1966; MONZ, Hudson Collection); WN, Karori, Wellington. Synonymised by Fleming & Ordish, 1966: 199.

Melampsalta cruentata var. *sub-alpina*: Myers, 1921a: 244. Placement based on Myers' misconception of Walker's *cruentata* (J. S. Dugdale, personal communication).

Melampsalta subalpina: Myers & Myers, 1924: 425.

Melampsalta muta var. *b. subalpina*: Myers, 1926a: 74.

Melampsalta muta var. *subalpina*: Myers, 1927: 687.

Melampsalta muta var. *callista* Hudson, 1950: 138. Lectotype female (designated by Fleming & Ordish, 1966; MONZ, Hudson Collection); WN, Mount Holdsworth lower slopes. Synonymised by Fleming & Ordish, 1966: 199.

Cicadetta subalpina: Dugdale & Fleming, 1969: 954.

Kikihia subalpina: Dugdale, 1972: 875.

Common name: Subalpine Green Cicada.

Geographic distribution (Map p. 211). North Island: GB, HB, RI, TK, TO, WN. South Island: BR, DN, FD, KA, MC, MK, NN, OL, SC, SD, WD. Stewart Island.

Biology. Lowland to subalpine (mostly montane to subalpine, North Island). Found on subalpine scrub vegetation (e.g., *Hebe*, *Ozothamnus*, *Phyllocladus alpinus*, *Podocarpus nivalis*), sometimes also in the canopy of *Nothofagus solandri cliffortioides* (central North Island); in scrubland on ridges down to about 100 m elevation (lower North Island); in forest canopy (e.g., *Nothofagus*, exotic plantations) from tree line to sea level, but rarely in true subalpine environments (South Island). Seasonality: December, January (mostly), February–April. Xylem-feeder. Wing condition: Submacropterous.

References. Myers, 1929b (taxonomy; as *Melampsalta muta* var. *subalpina*). Hudson, 1950 (taxonomy; as *Melampsalta muta* var. *sub-alpina*). Metcalf, 1963a: 363 (catalogue, world; as *Cicadetta muta subalpina*). Dugdale, 1972 (distribution, nomenclature). Fleming, 1975b (biology, distribution). Wise, 1977: 74–75 (checklist, New Zealand). Fleming, 1984 (biology, distribution, song, taxonomy). Duffels & Van der Laan, 1985: 306–307 (catalogue, world). Lane, 1995 (hybridization). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand).

Notes. South Island populations currently referred to *K. subalpina* may represent another taxon. Additional information on distribution and biology can be found in works cited under **References**. See also **Notes** under *K. horologium*.

Genus *Maoricicada* Dugdale, 1972^E

Maoricicada Dugdale, 1972: 875. Type species: *Melampsalta campbelli* Myers, 1923b, by original designation.

Common name: Black Cicadas.

Geographic distribution. New Zealand.

References. Dugdale, 1972 (distribution, species list, taxonomy). Fleming, 1975a (song). Wise, 1977: 75 (checklist, New Zealand). Dugdale & Fleming, 1978 (revision). Duffels & Van der Laan, 1985: 307–311 (catalogue, world). Buckley *et al.*, 2001a, c (evolution), 2002 (biology, evolution), 2006 (evolution). Larivière *et al.*, 2006 (guide to species, identification). Buckley & Simon, 2007 (evolution). Hill *et al.*, 2009 (evolution).

Notes. This genus was revised first by Fleming (1971), and later by Dugdale & Fleming (1978), bringing the known fauna to 19 known taxa (14 species, five subspecies). Buckley *et al.* (2002) established the monophyly of the genus and also suggested, through mitochondrial DNA sequence analysis, that cryptic species may be present in *Maoricicada*. Arensburger *et al.* (2004b) estimated a total of 19 species once the genus is fully revised. Members of this genus are sometimes referred to as the mountain black cicadas or simply black cicadas.

Maoricicada alticola Dugdale & Fleming, 1978^E

Type photograph p. 169.

Maoricicada alticola Dugdale & Fleming, 1978: 313. Holotype male (NZAC): MB, Upper Wairau Valley, Crimea Range, Turk Ridge.

Common name: High Alpine Cicada.

Geographic distribution (Map p. 211). South Island: MB–Crimea Range, Turk Ridge (NZAC). “East of Spencer and Travers Ranges” (Dugdale & Fleming, 1978). Rainbow Ski Field (Buckley *et al.*, 2002). Wairau–Rainbow [Rivers] Divide (NZAC).

Biology. High alpine (above 1800 m). Found in rock-fields on rocky ridge-crests and summits that are sparsely vegetated with small prostrate shrubs and cushion plants, e.g., *Dracophyllum*, *Raoulia* (J. S. Dugdale, personal communication). Seasonality: February. Xylem-feeder. Wing condition: Submacropterous.

References. Dugdale & Fleming, 1978 (biology, distribution, song, taxonomy). Duffels & Van der Laan, 1985: 307 (catalogue, world). Buckley *et al.*, 2002 (distribution).

Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand).

Note. Additional information on distribution and biology can be found in works cited under **References**.

Maoricicada campbelli (Myers, 1923) ^E

Type photograph p. 169.

Melampsalta campbelli Myers, 1923b: 430. Holotype female (NZAC ex BMNH); WD, Otira.

Pauropsalta maorica Myers, 1923b: 431. Holotype female (NZAC ex BMNH); NN, Nelson. Synonymised by Salmon, 1950: 1.

Melampsalta maorica: Myers, 1929b: 38.

Cicadetta campbelli: Metcalf, 1963a: 299.

Maoricicada campbelli: Dugdale, 1972: 876.

Common name: Campbell's Cicada.

Geographic distribution (Map p. 211). North Island: HB, TO, WN. South Island: BR, CO, FD, KA, MB, MC, MK, NC, NN, OL, SC, SD, WD.

Biology. Lowland, subalpine. Found mostly along at least sparsely vegetated gravelly riverbeds, well-drained flats and lakeshores with rounded boulders and gravel, as well as adjacent alluvial deposits, rocks, cliff faces, grassy pastures; also on bare volcanic rock (North Island Central Volcanic Plateau); apparently absent from forests. Males usually sing on boulders or on adjacent vegetation such as grass, herbages, shrubs; emerging nymphs observed in sparsely vegetated riverflats, under boulders (possible oviposition sites for females). Seasonality: November–March, mostly January–February. Xylem-feeder. Wing condition: Submacropterous.

References. Myers, 1929b (taxonomy; as *Melampsalta campbelli*, *M. maorica*). Hudson, 1950 (taxonomy; as *Melampsalta campbelli* and *M. maorica*). Metcalf, 1963a: 299 (catalogue, world; as *Cicadetta campbelli*). Fleming, 1971 (biology, distribution, song, taxonomy). Dugdale & Fleming, 1978 (distribution, taxonomy). Duffels & Van der Laan, 1985: 307 (catalogue, world). Buckley *et al.*, 2001a (evolution), 2002 (biology). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand). Hill *et al.*, 2009 (biogeography, evolution).

Notes. *Maoricicada campbelli* is the most widespread of *Maoricicada* species. Buckley *et al.* (2001a) conducted a phylogenetic analysis, using mtDNA sequences, which showed a relatively high level of genetic variation within *M. campbelli*, and recognised two distinct evolutionary lineages, one that arose in the North of its present range and another that arose in the South (CO-OL). The study concluded that these two lineages may prove to represent two cryptic species. Additional information on distribution and biology can be found in works cited under **References**.

Maoricicada cassiope (Hudson, 1891) ^E

Type photograph p. 170.

Cicada cassiope Hudson, 1891: 54. Lectotype male (designated by Fleming & Ordish, 1966; MONZ); NN, Dun Mountain.

Melampsalta cassiope: Kirby, 1896: 457.

Cicadetta cassiope: Kirkaldy, 1907b: 308.

Maoricicada cassiope: Dugdale, 1972: 876.

Common name: Screaming Cicada.

Geographic distribution (Map p. 211). North Island: RI, TO, WA. South Island: BR, KA, MB, MC, NC, NN, SD.

Biology. Montane (higher), alpine. *Dracophyllum*-dominated elevated sour-soil, granitic, dunite-dominated, subalpine pumice/ash, and greywacke, subalpine shrubland, not exceeding the shrub-line and not descending into beech forest canopy; a wary singer, favouring erect shrubs such as *Dracophyllum* (J. S. Dugdale, personal communication). Seasonality: November–May, but mostly January–February. Xylem-feeder. Wing condition: Submacropterous.

References. Myers, 1929b (taxonomy; as *Melampsalta cassiope*). Hudson, 1950 (taxonomy; as *Melampsalta cassiope*). Metcalf, 1963a: 299–300 (catalogue, world; as *Cicadetta cassiope*). Fleming, 1975b (biology, distribution, song). Wise, 1977: 75 (checklist, New Zealand). Dugdale & Fleming, 1978 (biology, distribution, song, taxonomy). Duffels & Van der Laan, 1985: 308 (catalogue, world). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand).

Notes. According to Dugdale & Fleming (1978), early descriptions of this species included material of other species such as *M. mangu* and *M. oromelaena* from Mount Earnslaw, Lake Harris, Lake Wakatipu, etc., well south of the range of *M. cassiope*. These authors gave a historical review of material in the Hudson collection (MONZ) including the specimen selected as lectotype by Fleming & Ordish (1966). *Maoricicada cassiope* has been erroneously recorded as *Melampsalta nervosa* or *M. quadricincta* by early authors (e.g., Distant, 1892, 1906a; Hudson, 1893; Myers 1921a). Additional information on distribution and biology can be found in works cited under **References**.

Maoricicada clamitans Dugdale & Fleming, 1978 ^E

Type photograph p. 170.

Maoricicada clamitans Dugdale & Fleming, 1978: 313.

Holotype male (MONZ); MK, Mackenzie Pass.

Common name: Yodelling Cicada.

Geographic distribution (Map p. 212). South Island: CO, MK, NN, OL, SC.

Biology. Montane, subalpine. Found on low rainfall mountains on the *Aciphylla* scrub (e.g., *A. colensoi*, *A. aurea*) and tussock zone vegetation; occasionally found singing on

rock. Seasonality: December, January (mostly), February. Xylem-feeder. Wing condition: Submacropterous.

References. Fleming, 1975b (biology, distribution; as *Maoricicada* sp. C). Dugdale & Fleming, 1978 (biology, distribution, song, taxonomy). Duffels & Van der Laan, 1985: 308 (catalogue, world). Simon *et al.*, 2003 (biology, distribution). Larivière, 2005 (checklist, New Zealand).

Note. Additional information on distribution and biology can be found in works cited under **References**.

Maoricicada hamiltoni (Myers, 1926)^E

Type photograph p. 171.

Melampsalta hamiltoni Myers, 1926a: 71. Holotype male (NZAC ex BMNH); NC, Arthur's Pass 2500 ft [762 m].

Cicadetta hamiltoni: Metcalf, 1963a: 317.

Maoricicada hamiltoni: Dugdale, 1972: 876.

Common name: Hamilton's Cicada.

Geographic distribution (Map p. 212). North Island: RI, WA, WI, WN. South Island: BR, KA, MB, MC, MK, NC, WD.

Biology. Lowland to montane. Found in riverbeds with angular debris; nymphs feeding on riparian herbs/forbs amongst the shingle (based on where nymphal exuviae have been found) (J. S. Dugdale, personal communication). Males singing during the day, often very noisily, from bare boulders warmed up by the sun, away from vegetation, in association with females. Seasonality: November, December, January (mostly). Xylem-feeder. Wing condition: Submacropterous.

References. Myers, 1929b (taxonomy; as *Melampsalta hamiltoni*). Hudson, 1950 (taxonomy; as *Melampsalta hamiltoni*). Metcalf, 1963a: 317 (catalogue, world; as *Cicadetta hamiltoni*). Fleming, 1975b (song). Wise, 1977: 75 (checklist, New Zealand). Dugdale & Fleming, 1978 (biology, distribution, taxonomy). Duffels & Van der Laan, 1985: 308 (catalogue, world). Buckley *et al.*, 2002 (biology). Simon *et al.*, 2003 (biology, distribution). Larivière, 2005 (checklist, New Zealand).

Note. Additional information on distribution and biology can be found in works cited under **References**.

Maoricicada iolanthe (Hudson, 1891)^E

Type photograph p. 171.

Cicada iolanthe Hudson, 1891: 53. Lectotype female (designated by Fleming & Ordish, 1966; NZAC ex MONZ, Hudson Collection); WN, [Wellington] Karori.

Melampsalta iolanthe: Distant, 1892: 326.

Cicadetta iolanthe: Kirkaldy, 1909a: 27.

Maoricicada iolanthe: Dugdale, 1972: 876.

Common name: Iolanthe Cicada.

Geographic distribution (Map p. 212). North Island: BP, CL, GB, TK, TO, WN, WO.

Biology. Lowland to montane (lower). Males singing on

shrubs (e.g., *Leptospermum*) and small trees out in the open or at forest margins; females nearly always encountered on bare ground, e.g., little-used pumice or clay roads; nymphal exuviae found beside such bare areas (J. S. Dugdale, personal communication). Seasonality: October–February, occasionally March. Xylem-feeder. Wing condition: Submacropterous.

References. Myers, 1929b (taxonomy; as *Melampsalta iolanthe*). Hudson, 1950 (taxonomy; as *Melampsalta iolanthe*). Metcalf, 1963a: 319–320 (catalogue, world; as *Cicadetta iolanthe*). Fleming, 1971 (biology, distribution, song, taxonomy), 1975b (biology). Wise, 1977: 75 (checklist, New Zealand). Dugdale & Fleming, 1978 (biology, distribution, taxonomy). Duffels & Van der Laan, 1985: 308–309 (catalogue, world). Buckley *et al.*, 2002 (biology). Simon *et al.*, 2003 (biology, distribution). Larivière, 2005 (checklist, New Zealand).

Note. Myers' (1926a, 1929b) illustrations of the male genitalia of *Melampsalta iolanthe* and information on Orongorongo specimens of this species should be referred to *Maoricicada myersi*. Additional information on distribution and biology can be found in works cited under **References**.

Maoricicada lindsayi (Myers, 1923)^E

Type photograph p. 172.

Pauropsalta lindsayi Myers, 1923b: 431. Holotype male (NZAC ex BMNH); NC, Mount Grey.

Melampsalta lindsayi: Myers, 1927: 688.

Cicadetta lindsayi: Fleming, 1971: 453.

Maoricicada lindsayi: Dugdale, 1972: 876.

Common name: Lindsay's Cicada.

Geographic distribution (Map p. 212). South Island: KA, MB, NC.

Biology. Lowland (mostly) to montane (lower; in eastern, low rainfall localities). Found on rock outcrops (greywacke, Tertiary limestone, siltstone) and loess (windblown silt deposits) on valley slopes, slips, and road cuttings; habitats increased by accelerated erosion of a deforested landscape (J. S. Dugdale, personal communication). Apparently absent from gravelly riverbeds and forests. Seasonality: November–January (mostly), February. Xylem-feeder. Wing condition: Submacropterous.

References. Myers, 1929b (taxonomy; as *Melampsalta lindsayi*). Hudson, 1950 (taxonomy; as *Melampsalta lindsayi*). Metcalf, 1963a: 408 (catalogue, world; as *Pauropsalta lindsayi*). Fleming, 1971 (biology, distribution, song, taxonomy). Wise, 1977: 75 (checklist, New Zealand). Dugdale & Fleming, 1978 (taxonomy). Duffels & Van der Laan, 1985: 309 (catalogue, world). Buckley *et al.*, 2002 (biology). Simon *et al.*, 2003 (biology, distribution). Larivière, 2005 (checklist, New Zealand).

Note. Additional information on distribution and biology can be found in works cited under **References**.

***Maoricicada mangu celer* Dugdale & Fleming, 1978^E**

Type photograph p. 172.

Maoricicada mangu celer Dugdale & Fleming, 1978: 328.

Holotype male (NZAC); MB, Crimea Range, Turk Ridge.

Common name: Braying Cicada.

Geographic distribution (Map p. 212). South Island: MB–Crimea Range, Turk Ridge.

Biology. Alpine. Unlike other subspecies of *M. mangu*, *celer* is restricted to low rainfall alpine basins with herb-fields and surrounding ridges above 1600 m (J. S. Dugdale, personal communication). Seasonality: February. Xylem-feeder. Wing condition: Submacropterous.

References. Dugdale & Fleming, 1978 (biology, distribution, song, taxonomy). Duffels & Van der Laan, 1985: 309 (catalogue, world). Simon *et al.*, 2003 (distribution, song). Larivière, 2005 (checklist, New Zealand).

Note. Additional information on distribution and biology can be found in works cited under **References**.

***Maoricicada mangu gourlayi* Dugdale & Fleming, 1978^E**

Type photograph p. 173.

Maoricicada mangu gourlayi Dugdale & Fleming, 1978: 328.

Holotype male (MONZ); NN, Dun Mountain.

Common name: Dun Mountain Cicada.

Geographic distribution (Map p. 212). South Island: BR–Mount Robert, Matai-Roding Saddle (Dugdale & Fleming, 1978). NN–Dun Mountain (NZAC).

Biology. Montane (higher) to alpine. Found on screes and rock outcrops, especially in mineral-rich zones. Males sing on bare soil pavements (degraded soliflual debris) in degraded tussock and sparse shrubland, and on neighbouring screes and rock-fields, at subalpine to alpine levels (J. S. Dugdale, personal communication). Seasonality: December–February. Xylem-feeder. Wing condition: Submacropterous.

References. Dugdale & Fleming, 1978 (biology, distribution, song, taxonomy). Duffels & Van der Laan, 1985: 309 (catalogue, world). Simon *et al.*, 2003 (distribution). Larivière, 2005 (checklist, New Zealand).

***Maoricicada mangu mangu* (White, 1879)^E**

Melampsalta mangu White, 1879: 214. Lectotype* female (designated by Dugdale & Fleming, 1978; BMNH ex Perth Museum, Scotland): MC, Porters Pass.

Cicadetta mangu: Kirkaldy, 1907b: 308.

Maoricicada mangu: Dugdale, 1972: 876.

Maoricicada mangu mangu: Dugdale & Fleming, 1978: 298.

Common name: Canterbury Scree Cicada.

Geographic distribution (Map p. 212). South Island: BR, MC, MK, NC, NN, SC.

Biology. Montane (higher) to alpine. Found on screes (mostly) and eroded downslope accumulations of saturated, unfrozen soil debris; sometimes collected in riverbeds, on tussock or bare rock. Males sing on bare soil pavements (degraded soliflual debris) in degraded tussock and sparse shrubland, and on neighbouring screes and rock-fields, at subalpine to alpine levels (J. S. Dugdale, personal communication); both sexes emerge at the edge of bare ground near surrounding tussock grassland where nymphs may live. Seasonality: January–March, mostly January. Xylem-feeder. Wing condition: Submacropterous.

References. Myers, 1929b (taxonomy; as *Melampsalta mangu*). Hudson, 1950 (taxonomy; as *Melampsalta mangu*). Metcalf, 1963a: 328–329 (catalogue, world; as *Cicadetta mangu*). Dugdale, 1972 (distribution, nomenclature; as *Maoricicada mangu*). Wise, 1977: 75 (checklist, New Zealand; as *Maoricicada mangu*). Dugdale & Fleming, 1978 (biology, distribution, song, taxonomy). Duffels & Van der Laan, 1985: 309–310 (catalogue, world). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand).

Notes. According to Dugdale & Fleming (1978), Hudson's (1950: 147) nomination of a neotype is invalid. In addition, although the type locality [for *M. mangu*] was firmly established from the start, subsequent authors applied the name widely to all subspecies and some related species. The species has also been erroneously recorded under the names *Melampsalta nervosa* or *M. quadricincta* by early authors (e.g., Distant, 1892, 1906a; Myers, 1921a). Additional information on distribution and biology can be found in works cited under **References**.

***Maoricicada mangu multcostata* Dugdale & Fleming, 1978^E**

Type photograph p. 173.

Maoricicada mangu multcostata Dugdale & Fleming, 1978: 328. Holotype male (MONZ); MB, Altmarlock [Peak] Hut.

Common name: Northern Scree Cicada.

Geographic distribution (Map p. 212). South Island: KA, MB, NC.

Biology. Subalpine to alpine. Found on bare soil faces and screes. Males sing on bare soil pavements (degraded soliflual debris) in degraded tussock and sparse shrubland, and on neighbouring screes and rock-fields, at subalpine to alpine levels (J. S. Dugdale, personal communication). Seasonality: January–March. Xylem-feeder. Wing condition: Submacropterous.

References. Dugdale & Fleming, 1978 (biology, distribution, song, taxonomy). Duffels & Van der Laan, 1985: 310

(catalogue, world). Buckley *et al.*, 2002 (distribution). Simon *et al.*, 2003 (distribution). Larivière, 2005 (checklist, New Zealand).

Note. Additional information on distribution and biology can be found in works cited under **References**.

Maoricicada myersi (Fleming, 1971) ^E

Type photograph p. 174.

Cicadetta myersi Fleming, 1971: 455. Holotype male (MONZ); WN, Orongorongo River.

Maoricicada myersi: Dugdale, 1972: 876.

Common name: Myers' Cicada.

Geographic distribution (Map p. 212). North Island: WN–Orongorongo River and vicinity (NZAC; Dugdale, 1972).

Biology. [Lowland (including coastal), montane.] Found almost exclusively along low steeply banked streams, in angular alluvial gravel deposits, sloping accumulations of rock debris at the base of nearby cliffs or on adjacent steep rock faces where crevices containing some herbs (e.g., *Epilobium*) and grass may be used as feeding and breeding sites (suggested by the collection of nymphal exuviae); apparently absent from forests. Males sing on bare sloping accumulations of rock debris away from any vegetation. Seasonality: November–January. Xylem-feeder. Wing condition: Submacropterous.

References. Fleming, 1971 (biology, distribution, song, taxonomy). Wise, 1977: 75 (checklist, New Zealand). Dugdale & Fleming, 1978 (biology, distribution, taxonomy). Duffels & Van der Laan, 1985: 310 (catalogue, world). Buckley *et al.*, 2002 (biology). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand).

Notes. Additional information on distribution and biology can be found in works cited under **References**. See also **Notes** under *M. iolanthe* and **Biology** under *M. lindsayi*.

Maoricicada nigra frigida Dugdale & Fleming, 1978 ^E

Type photograph p. 174.

Maoricicada nigra frigida Dugdale & Fleming, 1978: 331.

Holotype male (NZAC); CO, Old Man Ra. [=Range], nr. [=near] Obelisk.

Common name: Eastern Subnival Cicada.

Geographic distribution (Map p. 213). South Island: CO–Fruitlands (see above) (Dugdale & Fleming, 1978). Shingle Creek (above) (Dugdale & Fleming, 1978). Garvie Mountains (NZAC). Old Man Range, near Obelisk (NZAC). The Remarkables (NZAC) (Double Cone (Dugdale & Fleming, 1978); Lake Alta (Dugdale & Fleming, 1978), Rastus Burn (Buckley *et al.*, 2002)). Pisa Range (NZAC), near Lake McKay (Dugdale & Fleming, 1978).

Biology. Alpine. Restricted to Otago lower rainfall block mountains above 1400 m (South) to 1600 m (North), where 'semi-tundra' phenomena are present, the soil is permanently moist (frozen in winter), and covered almost completely by a tight Asteraceae-dominated turf; newly emerged nymphs have been recovered from amongst roots of *Celmisia viscosa* rosettes (oviposition host?); on Garvie and Remarkables massifs, found in basins (e.g., Lake Alta) and similar seepage areas in a glaciated landscape (J. S. Dugdale, personal communication). Seasonality: January–April. Xylem-feeder. Wing condition: Submacropterous.

References. Fleming, 1975b (biology, distribution; as *Maoricicada* sp. F). Dugdale & Fleming, 1978 (biology, distribution, song, taxonomy). Duffels & Van der Laan, 1985: 310 (catalogue, world). Buckley *et al.*, 2002 (distribution). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand).

Note. Additional information on distribution and biology can be found in works cited under **References**.

Maoricicada nigra nigra (Myers, 1921) ^E

Melampsalta nigra Myers, 1921a: 247. Holotype* male (presumed repository BMNH); WD, "Mountains on east side of Arthurs Pass" = Temple Basin (Dugdale & Fleming, 1978).

Cicadetta nigra: Metcalf, 1963a: 364.

Maoricicada nigra: Dugdale, 1972: 876.

Maoricicada nigra nigra: Dugdale & Fleming, 1978: 298.

Common name: Western Subnival Cicada.

Geographic distribution (Map p. 213). South Island: BR, FD, MC, MK, NC, NN, OL, WD.

Biology. Alpine. Extending into subnival (winter snow only) or approaching the nival zone (permanent snow/ice); hosts are likely to be *Dolichoglottis lyallii* and other plants dependent on snow-melt in depressions or wet screes (e.g., above Gertrude Saddle, FD, or tarn on Gloriana, Spenser Mountains, BR); males singing on ground usually close to sparse vegetation (J.S. Dugdale, personal communication). Seasonality: November–March, mostly January–February. Xylem-feeder. Wing condition: Submacropterous.

References. Myers, 1929b (taxonomy; as *Melampsalta nigra*). Hudson, 1950 (taxonomy; as *Melampsalta nigra*). Metcalf, 1963a: 364 (catalogue, world; as *Cicadetta nigra*). Dugdale, 1972 (distribution, nomenclature; as *K. nigra*). Wise, 1977: 75 (checklist, New Zealand; as *M. nigra*). Dugdale & Fleming, 1978 (biology, distribution, song, taxonomy). Duffels & Van der Laan, 1985: 310 (catalogue, world). Simon *et al.*, 2003 (biology, distribution). Larivière, 2005 (checklist, New Zealand).

Note. Additional information on distribution and biology can be found in works cited under **References**.

***Maoricicada oromelaena* (Myers, 1926)^E**

Type photograph p. 175.

Melampsalta oromelaena Myers, 1926a: 65. Holotype male (NZAC); FD, Hunter Mountains, Mount Cleughearn [=Cleughearn Peak].

Cicadetta oromelaena: Metcalf, 1963a: 366.

Maoricicada oromelaena: Dugdale, 1972: 876.

Common name: Greater Alpine Black Cicada.

Geographic distribution (Map p. 213). South Island: BR, FD, MB, MC, MK, NC, NN, OL, SC, WD.

Biology. Montane (higher) to alpine. Males are heard singing from upper montane/subalpine to over 2100 m in nival zone but females are concentrated in alpine zone, herbfields, scree, and rockfalls (J. S. Dugdale, personal communication); both sexes can also be found along screes and the angular alluvial gravel deposits of streams at lower elevations. Seasonality: November–April, mostly January–February. Xylem-feeder. Wing condition: Submacropterous.

References. Myers, 1929b (taxonomy; as *Melampsalta oromelaena*). Hudson, 1950 (taxonomy; as *Melampsalta oromelaena*). Metcalf, 1963a: 366 (catalogue, world; as *Cicadetta oromelaena*). Dugdale, 1972 (distribution, nomenclature). Wise, 1977: 76 (checklist, New Zealand). Dugdale & Fleming, 1978 (biology, distribution, song, taxonomy). Duffels & Van der Laan, 1985: 311 (catalogue, world). Simon *et al.*, 2003 (biology, distribution). Larivière, 2005 (checklist, New Zealand).

Note. Additional information on distribution and biology can be found in works cited under **References**.

***Maoricicada otagoensis maceweni* Dugdale & Fleming, 1978^E**

Type photograph p. 175.

Maoricicada otagoensis maceweni Dugdale & Fleming, 1978: 336. Holotype male (MONZ); SL, Takitimu Range, Cheviot Face.

Common name: Southern Speargrass Cicada.

Geographic distribution (Map p. 213). South Island: SL–Takitimu Range (NZAC) (Cheviot Face (NZAC), above Forest Service hut (Dugdale & Fleming, 1978); E [=East] of Blackmount homestead in area retired for grazing (Dugdale & Fleming, 1978); SW [=South West] ridge, Whare Creek (Dugdale & Fleming, 1978)).

Biology. Subalpine to alpine (lower). [Gullies and screes, and other habitats probably similar to those occupied by *M. otagoensis otagoensis*.] One female caught on lower leaves of large *Celmisia* (J. S. Dugdale, personal communication). Seasonality: January, February. Xylem-feeder. Wing condition: Submacropterous.

References. Dugdale & Fleming, 1978 (biology, distribu-

tion, song, taxonomy). Duffels & Van der Laan, 1985: 311 (catalogue, world). Simon *et al.*, 2003 (biology, distribution). Larivière, 2005 (checklist, New Zealand).

Note. Additional information on distribution and biology can be found in works cited under **References**.

***Maoricicada otagoensis otagoensis* Dugdale & Fleming, 1978^E**

Type photograph p. 176.

Maoricicada otagoensis otagoensis Dugdale & Fleming, 1978: 335. Holotype male (MONZ); OL, Coronet Peak.

Common name: Otago Speargrass Cicada.

Geographic distribution (Map p. 213). South Island: CO, OL, SC.

Biology. Subalpine, alpine. Found in tussock grasslands with herbage and low shrubs, on rock outcrops (e.g., schist outcrops), screes and rocky landslides from which males sing; nymphs observed emerging from low shrubs (e.g., *Dracophyllum*). Seasonality: January–February. Xylem-feeder. Wing condition: Submacropterous.

References. Fleming, 1975b (biology, distribution; as *Maoricicada* sp. O). Dugdale & Fleming, 1978 (biology, distribution, song, taxonomy). Duffels & Van der Laan, 1985: 311 (catalogue, world). Simon *et al.*, 2003 (biology, distribution). Larivière, 2005 (checklist, New Zealand).

Notes. The typical cicada of the speargrass belt on Central Otago mountains, marking the zone that elsewhere supports subalpine shrubland (J. S. Dugdale, personal communication), hence the common name. Additional information on distribution and biology can be found in works cited under **References**. See also **Biology** under *M. otagoensis maceweni*.

***Maoricicada phaeoptera* Dugdale & Fleming, 1978^E**

Type photograph p. 176.

Maoricicada phaeoptera Dugdale & Fleming, 1978: 337. Holotype male (MONZ); OL, Sentinel Peak.

Common name: Southern Dusky Cicada.

Geographic distribution (Map p. 213). South Island: CO, MK, OL, SC.

Biology. Subalpine to alpine. Found in herb-field and adjacent *Chionochloa* grassland; males sing on bare surfaces (farm tracks, eroded soils, rocks); large numbers of emerging adults have been found in Asteraceae-dominated herbfields (January 1971 in a shallow basin on Sentinel Peak, OL) (J.S. Dugdale, personal communication). Nymphal exuviae have been found commonly around *Celmisia lyallii* (Asteraceae). Seasonality: mostly January–February. Xylem-feeder. Wing condition: Submacropterous.

References. Fleming, 1975b (biology, distribution; as *Maoricicada* sp P). Dugdale & Fleming, 1978 (biology, distribution, song, taxonomy). Duffels & Van der Laan, 1985: 311 (catalogue, world). Simon *et al.*, 2003 (biology, distribution). Larivière, 2005 (checklist, New Zealand).

Note. Additional information on distribution and biology can be found in works cited under **References**.

***Maoricicada tenuis* Dugdale & Fleming, 1978^E**

Type photograph p. 177.

Maoricicada tenuis Dugdale & Fleming, 1978: 338. Holotype male (NZAC); MB, Island Pass [=Saddle].

Common name: Northern Dusky Cicada.

Geographic distribution (Map p. 213). South Island: BR, MB, NN.

Biology. Subalpine to alpine (mostly). Abundant in alpine herbfields dominated by Asteraceae and in *Chionochloa* (snowgrass) communities, in low and high rainfall areas (J. S. Dugdale, personal communication). Males sing mostly on bare soil or rock surfaces, less often on vegetation; many nymphal exuviae have been found around *Celmisia lyallii* in a herbfield under Turk Ridge (MB). Seasonality: January, February (mostly), March. Xylem-feeder. Wing condition: Submacropterous.

References. Fleming, 1975b (biology, distribution; as *Maoricicada* sp T). Dugdale & Fleming, 1978 (biology, distribution, song, taxonomy). Duffels & Van der Laan, 1985: 311 (catalogue, world). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand).

Note. Additional information on distribution and biology can be found in works cited under **References**.

Genus *Notopsalta* Dugdale, 1972^N

Notopsalta Dugdale, 1972: 864. Type species: *Cicada sericea* Walker, 1850, by original designation.

Geographic distribution. Australia (East continental), New Zealand.

References. Dugdale, 1972 (distribution, New Zealand, species list, taxonomy). Fleming, 1975a (song). Wise, 1977: 72 (checklist, New Zealand). Duffels & Van der Laan, 1985: 296–297 (catalogue, world). Moulds, 1990 (Australia, biology, distribution, identification). Larivière *et al.*, 2006 (guide to New Zealand species, identification).

Notes. According to Dugdale (1972), *Notopsalta* is restricted to one New Zealand species and one Australian species (*N. atrata* Goding & Froggatt, 1904) of which he saw the type. Simon *et al.* (2003) remarked, however, that the Australian species may belong to a different genus.

***Notopsalta sericea* (Walker, 1850)^E**

Cicada sericea Walker, 1850: 169. Holotype* female (BMNH); New Zealand “a_e. New Zealand. Presented by Dr Sinclair.”. Collected by Dr A. Sinclair around the Waitemata Harbour [AK] (J. S. Dugdale, personal communication).

Cicada nervosa Walker, 1850: 213. Holotype* male (BMNH); New Zealand, “a, b. New Zealand. Presented by Dr. Sinclair.” Synonymised by Myers, 1926a: 62.

Melampsalta sericea: Kirby, 1896: 456.

Melampsalta cruentata var. *sericea*: Hutton, 1898b: 183.

Cicadetta sericea: Kirkaldy, 1909a: 28.

Melampsalta indistincta Myers, 1921a: 245. Syntypes* status uncertain (MONZ, Hudson collection); “Pipiriki, Wanganui River, Auckland (Hudson); Paekakariki” (Myers, 1921a: 245). Synonymised by Myers, 1926a: 62. See also **Notes**.

Melampsalta sericea: Myers, 1926a: 62.

Notopsalta sericea: Dugdale, 1972: 864.

Common name: Clay Bank Cicada.

Geographic distribution (Map p. 213). North Island: AK, BP, CL, HB, ND, RI, TK, WA, WI, WN. Offshore Islands: TH.

Biology. Lowland, mostly coastal. Collected mainly on cliffs, clay banks, dunes, and roadsides; on bare ground surfaces, trees, scrub vegetation, grass, the walls of buildings; also shelterbelts (e.g., *Casuarina*) around orchards (e.g., kiwifruit). Seasonality: October–March, mostly November–February. Xylem-feeder. Wing condition: Submacropterous.

References. Myers, 1929b (taxonomy; as *Melampsalta sericea*). Hudson, 1950 (taxonomy; as *Melampsalta sericea*). Metcalf, 1963a: 378–380 (catalogue, world; as *Cicadetta sericea*). Dugdale, 1972 (distribution, nomenclature). Wise, 1977: 72–73 (checklist, New Zealand). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand). Logan & Connolly, 2005 (biology, nymphal exuviae).

Notes. This taxon has been erroneously recorded by some earlier authors under the specific epithet *scutellaris* Walker. MONZ has Hudson specimens of *Melampsalta indistincta* collected from Pipiriki in 1902; they may be part of the type series. Andrews (1986) provides information on A. Sinclair’s insect collecting in New Zealand, which may be useful to clarify type data.

Genus *Rhodopsalta* Dugdale, 1972^E

Rhodopsalta Dugdale, 1972: 863. Type species: *Tettigonia cruentata* Fabricius, 1775, by original designation.

Common name: Redtailed Cicadas.

Geographic distribution. New Zealand.

References. Dugdale, 1972 (distribution, species list, tax-

onomy). Fleming, 1975a (song). Wise, 1977: 72 (checklist, New Zealand). Duffels & Van der Laan, 1985: 297–298 (catalogue, world). Larivière *et al.*, 2006 (guide to species, identification).

Notes. Three species are known. Arensburger *et al.* (2004b) suggested the existence of an additional, undescribed species. The genus has never been revised taxonomically.

***Rhodopsalta cruentata* (Fabricius, 1775)^E**

Tettigonia cruentata Fabricius, 1775: 680. Syntypes 2 (Banks collection, BMNH); New Zealand (as “Habitat in nova Zelandia.”). See also **Notes**.

Cicada cruentata: Goeze, 1778: 149.

Tettigonia cruentata: Fabricius, 1781: 320.

Cicada cincta Walker, 1850: 204. Holotype* apparently male (BMNH); New Zealand, “a. New Zealand. Presented by Dr. Sinclair.” Synonymised by Hudson, 1950: 135.

Melampsalta cruentata: White, 1879: 214.

Cicada muta var. *minor* Hudson, 1891: 52. Lectotype* male (designated by Fleming & Ordish, 1966; AMNZ); WN, Cape Terawhiti. Synonymised with *Cicada cincta* by Distant, 1906a: 173.

Melampsalta muta var. *cruentata*: Kirby, 1896: 455.

Cicadetta cruentata: Alfken, 1904: 582.

Rhodopsalta cruentata: Dugdale, 1972: 863.

Common name: Blood Redtail Cicada.

Geographic distribution (Map p. 213). North Island: AK, BP, CL, ND, RI, TK, TO, WI, WN. South Island: KA, MB, NC, NN, WD.

Biology. [Lowland (mostly) to subalpine.] Found at low elevation on various indigenous and introduced trees and shrubs (e.g., *Alnus glutinosa*, kiwifruit, *Trifolium-Discaria toumatou* associations, *Leptospermum scoparium*, mixed grass and *Ulex europaeus*), also on *Carex*, on coastal dune grass, in beech forests, or on shrubs in subalpine environments (e.g., North Island Central Volcanic Plateau). Nymphal exuviae and oviposition scars associated with shrubs and small trees in a Nelson (NN) garden (J. S. Dugdale, personal communication). Seasonality: November, December–March (mostly), April. Xylem-feeder. Wing condition: Submacropterous.

References. Myers, 1929b (taxonomy; as *Melampsalta cruentata*). Hudson, 1950 (taxonomy; as *Melampsalta cruentata*). Metcalf, 1963a: 306–309 (catalogue, world; as *Cicadetta cruentata*). Dugdale, 1972 (distribution, nomenclature). Wise, 1977: 72 (checklist, New Zealand). Duffels & Van der Laan, 1985: 297–298 (catalogue, world). Simon *et al.*, 2003 (biology, distribution, song). Larivière, 2005 (checklist, New Zealand). Logan & Connolly, 2005 (biology, nymphal exuviae).

Notes. Two syntypes are held in the Banks collection

(BMNH); two bear hand written New Zealand labels; one has a type label; all three labels have apparently been added more recently (M. D. Webb, personal communication).

The type may be one of the original insect specimens collected on Cook’s first voyage and described by Fabricius (see Andrews, 1986: 39, 40) and could be from Ship Cove (or surrounding shrubby ridges or islands), D’Urville Island, or any of Cook’s landing places along the east coast of the North Island between 8 October 1769 and 30 March 1770 (Andrews, 1986: 10–15) (J. S. Dugdale, personal communication). Andrews (1986) also provides information on A. Sinclair’s insect collecting in New Zealand, which may be useful to clarify type data for *Cicada cincta*. Hutton’s (1898a) record for the Chatham Islands is an error (Wise, 1977).

***Rhodopsalta leptomera* (Myers, 1921)^E**

Melampsalta leptomera Myers, 1921a: 246. Syntypes* [apparently more than 1 specimen including at least 1 female] (MONZ, Hudson collection); WN, [Wellington] Lyall Bay. See also **Note**.

Cicadetta leptomera: Metcalf, 1963a: 325.

Rhodopsalta leptomera: Dugdale, 1972: 863.

Common name: Sand Dune Redtail Cicada.

Geographic distribution (Map p. 214). North Island: AK–Warkworth (near) (Simon *et al.*, 2003). Whangaparaoa Peninsula (Simon *et al.*, 2003). ND–Uretī Beach (Simon *et al.*, 2003). WI–Tangimoana (NZAC). Castlecliff (NZAC). WN–Lyall Bay (NZAC). Otaki Beach (NZAC). Paraparaumu Beach (NZAC). Waikanae Beach (Buckley *et al.*, 2002; Arensburger *et al.*, 2004b). Wellington (NZAC).

Biology. Lowland, coastal. Found near the beach, on sand dune vegetation, e.g., marram grass, native grass, and *Scirpus frondosus* [= *Desmoschoenus spiralis*] (low down in leaf axils). Seasonality: November–February (adults). Xylem-feeder. Wing condition: Submacropterous.

References. Myers, 1921a (biology). Myers, 1929b (taxonomy; as *Melampsalta leptomera*). Hudson, 1950 (taxonomy; as *Melampsalta leptomera*). Metcalf, 1963a: 325–326 (catalogue, world; as *Cicadetta leptomera*). Dugdale, 1972 (distribution, nomenclature). Wise, 1977: 72 (checklist, New Zealand). Duffels & Van der Laan, 1985: 298 (catalogue, world). Buckley *et al.*, 2002 (distribution). Simon *et al.*, 2003 (biology, distribution). Arensburger *et al.*, 2004b (distribution). Larivière, 2005 (checklist, New Zealand).

Note. MONZ has Hudson specimens of *Melampsalta leptomera* from Lyall Bay dated January 1902 with the word ‘Myers’ next to them; they may be part of the type series.

***Rhodopsalta microdora* (Hudson, 1936)^E**

Type photograph p. 177.

Melampsalta microdora Hudson, 1936: 230. Lectotype female (designated by Fleming & Ordish, 1966; MONZ, Hudson Collection); HB, Cape Kidnappers.

Cicadetta microdora: Metcalf, 1963a: 331.

Melampsalta microdora: Fleming & Ordish, 1966: 198.

Cicadetta microdora: Wise, 1977: 76.

Rhodopsalta microdora: Author of combination undetermined. See **Notes**.

Common name: Little Redtail Cicada.

Geographic distribution (Map p. 214). North Island: BP, GB, HB, TO (eastern). South Island: CO, DN, MC, MK, NC, OL, SC, SL (possibly inland).

Biology. Mostly unknown. Associated with shrub communities (J. S. Dugdale, personal communication). Xylem-feeder. Wing condition: Submacropterous.

References. Hudson, 1950 (taxonomy; as *Melampsalta microdora*). Metcalf, 1963a: 331 (catalogue, world; as *Cicadetta microdora*). Wise, 1977: 76 (checklist, New Zealand; as *Cicadetta microdora*). Duffels & Van der Laan, 1985: 269 (catalogue, world; as *Cicadetta microdora*). Simon *et al.*, 2003 (distribution). Larivière, 2005 (checklist, New Zealand).

Notes. This species was not listed in *Rhodopsalta* by Dugdale (1972), which may suggest he regarded it as a synonym. Wise (1977), however, listed this species in the genus *Cicadetta*. Palma *et al.* (1989) again suggested that this taxon is conspecific with *R. cruentata*. Examination of the external morphology of a rather long series of specimens from Cape Kidnappers, identified as *R. cruentata* by Fleming in MONZ, also suggests that this may be the case but it would be premature to establish this synonymy without conducting a thorough revision of the genus as it may harbour species as yet undescribed. Geographic distribution based on authors' interpretation of data from Simon *et al.* (2003) for the North Island, "central eastern regions", and the South Island, "widely distributed east of the 'main divide' from the Wairau valley south."

Superfamily MEMBRACOIDEA**Family CICADELLIDAE****Leafhoppers**

References. Naudé, 1926 (revision, South Africa). Osborn, 1934a (revision, Samoa), 1934b (Marquesas Islands, revision). Oman, 1943b (genera, Nearctic Region, revision). Metcalf, 1946a (Guam, revision). Zimmerman, 1948 (Hawaii, revision). Linnavuori, 1960a (Fiji, revision), 1960b (Micronesia, revision). Metcalf, 1962–1968 (bibliography, catalogue, world). Whitten, 1965 (Australia, chromosomes). Evans, 1966 (Australia, New Zealand, taxonomy). Whitten & Taylor, 1969 (Australia, chromosomes). Knight, 1973–1976 (New Zealand, revision). Evans, 1974 (New Caledonia, revision). Eyles & Linnavuori, 1974 (Cook Islands, Niue Island, taxonomy). Linnavuori, 1975 (Micronesia, revision). Evans, 1977 (Australia, New Zealand, taxonomy). Wise, 1977 (checklist, New Zealand). Fletcher & Stevens, 1988 (Australia, identification, subfamilies, tribes). Oman *et al.*, 1990 (bibliography, checklist, genera, world). Fletcher *et al.*, 1991b (Australia, overview; Cicadelloidea). Day & Fletcher, 1994 (Australia, catalogue). Dietrich, 2000 (guide, subfamilies, world). Fletcher & Larivière, 2001 (Australia, New Zealand; checklist, identification). Fletcher & Watson, 2002b (Australia, checklist; updated by Fletcher, 2006). Larivière & Fletcher, 2004 (checklist, identification, New Zealand). Dietrich, 2005 (keys to subfamilies and tribes). Larivière, 2005 (checklist, New Zealand). Dietrich, 2006 (bibliography, identification).

Subfamily DELTOCEPHALINAE

References. Linnavuori, 1959 (Neotropical Region, revision). Evans, 1966 (Australia, New Zealand, taxonomy). Knight, 1975 (New Zealand, revision). Fletcher & Condello, 1993 (BPBM types). Fletcher, 1999 (Australia, overview).

Tribe ATHYSANINI**Genus *Arahura* Knight, 1975^E**

Arahura Knight, 1975: 185. Type species: *Arahura reticulata* Knight, 1975, by original designation.

Geographic distribution. New Zealand.

References. Knight, 1975 (revision). Evans, 1977 (checklist). Wise, 1977: 79 (checklist, New Zealand). Oman *et al.*, 1990: 191 (bibliography, checklist, genera, world).

***Arahura dentata* Knight, 1975^E**

Type photograph p. 152.

Arahura dentata Knight, 1975: 189. Holotype male (AMNZ); CL, Cuvier Island, summit.

Geographic distribution (Map p. 201). North Island: CL—Cuvier Island (AMNZ). Offshore Islands: TH (Knight, 1975).

Biology. [Lowland, coastal.] Collected on weeds and grass (Cuvier Island summit); swept over stream (Cuvier Island). Seasonality: January. [Phloem-feeder.] Wing condition: Brachypterous, with forewings reaching near midlength of abdomen and hindwings almost as long as forewings.

References. Knight, 1975 (biology, distribution, taxonomy, wing condition). Evans, 1977 (checklist). Wise, 1977: 79 (checklist, New Zealand).

***Arahura gourlayi* Knight, 1975^E**

Type photograph p. 152.

Arahura gourlayi Knight, 1975: 188. Holotype male (NZAC); SD, Stephens Island.

Geographic distribution (Map p. 201). South Island: SD—Stephens Island.

Biology. [Lowland.] Habitat: Unknown. Seasonality: January. [Phloem-feeder.] Wing condition: Micropterous, with forewings reaching near midlength of abdomen and hindwings reduced to small pads.

References. Knight, 1975 (biology, distribution, taxonomy, wing condition). Evans, 1977 (checklist). Wise, 1977: 79 (checklist, New Zealand).

***Arahura reticulata* Knight, 1975^E**

Type photograph p. 152.

Arahura reticulata Knight, 1975: 186. Holotype male (NZAC); FD, Hunter Mountains, Mount Burns.

Geographic distribution (Map p. 201). South Island: FD—Hunter Mountains, Mount Burns (NZAC). MC—Craigieburn, Nervous Knob (NZAC). OL—Coronet Peak (NZAC).

Biology. [Subalpine.] Collected on tussock (adults, nymphs), its probable hostplant. Seasonality: January–February. [Phloem-feeder.] Wing condition: Brachypterous to submacropterous.

References. Knight, 1975 (biology, distribution, taxonomy). Evans, 1977 (checklist). Wise, 1977: 79 (checklist, New Zealand).

Genus *Arawa* Knight, 1975^N

Arawa Knight, 1975: 176. Type species: *Arawa variegata* Knight, 1975, by original designation.

Geographic distribution. Australia (continental, Tasmania), New Zealand.

References. Knight, 1975 (New Zealand, revision). Evans, 1977 (checklist). Wise, 1977: 79 (checklist, New Zealand). Oman *et al.*, 1990: 191 (bibliography, checklist, genera, world). Day & Fletcher, 1994: 1205 (Australia, catalogue). Fletcher, 2004 (Australia, checklist, distribution, New Zealand, nomenclature).

Notes. Fletcher (2004) added two species to this genus by making two new combinations. The genus *Arawa* currently contains eight species, three of which are endemic to New Zealand, three are endemic to Australia, and the remaining two are shared between the two countries. Fletcher (2004) noted, however, that a comprehensive revision of the genus, based on male genitalia, is needed and that at least five undescribed species are known in the Australian fauna.

***Arawa dugdalei* Knight, 1975^E**

Type photograph p. 153.

Arawa dugdalei Knight, 1975: 181. Holotype male (NZAC); MB, Altimarlock [Peak].

Geographic distribution (Map p. 202). South Island: MB—Altimarlock [Peak] (NZAC). NN—Beebys Knob (NZAC).

Biology. [Subalpine, alpine.] Collected on *Agrostis tenuis* in eroded tussock area (NN). Seasonality: February. [Phloem-feeder.] Wing condition: Submacropterous.

References. Knight, 1975 (biology, distribution, taxonomy). Evans, 1977 (checklist). Wise, 1977: 79 (checklist, New Zealand).

***Arawa negata* (White, 1879)^E new combination**

Athysanus negatus White, 1879: 215. Lectotype male, here designated (Perth Museum and Art Gallery, Scotland); New Zealand.

Paradorydium negatus: Kirkaldy, 1909a: 28.

Athysanus negatus (?): Myers, 1922a: 10.

Athysanus negatus: Evans, 1966: 254.

Arawa salubris Knight, 1975: 180. Holotype male (NZAC); MK, Tasman Valley, West of Lake Pukaki. **new synonym.**

Geographic distribution (Map p. 202). North Island: TO—Ohakune (Knight, 1975). South Island: CO, DN, FD, KA, MB, MC, MK, NC, OL, SL, WD. Stewart Island.

Biology. Montane, subalpine. Collected mostly on rough stalked grass, sedges, various low plants (including *Raoulia*), and shrubs, in open or semi-open habitats, often near waterways (lagoons, lakes, streams); occasionally on *Hieracium praealtum* (adults, nymphs); also on fern in bush, *Medicago sativa*, *Nothofagus*, and in young pasture

and *Brassica rapa*. Seasonality: November, January–February (mostly), March–April. [Phloem-feeder.] Wing condition: Submacropterous to macropterous.

References. Evans, 1966 (taxonomy; as *Athysanus negatus*). Metcalf, 1967a: 369 (catalogue, world; as *Athysanus negatus*). Knight, 1975 (biology, distribution, taxonomy; as *Arawa salubris*). Evans, 1977 (checklist; as *Arawa salubris*). Wise, 1977: 79 (checklist, New Zealand; as *Arawa salubris*), 80 (checklist, New Zealand; as *Athysanus negatus*). Syrett & Smith, 1998 (biology; as *Arawa salubris*).

Notes. The status of *Athysanus negatus* White, 1879, known only from its original description, has been ambiguous until now. The species was listed by Myers (1922a), who questioned the identity of New Zealand specimens. Evans (1966: 254) listed the species as *incertae sedis* at the end of *Deltocephalinae*, and suggested that it may be a synonym of *Scaphetus brunneus* Evans, but this could not be confirmed without reference to the type, the location of which was unknown at the time. Knight (1975) made no reference to *A. negatus* in his revision of New Zealand *Deltocephalinae*, but Wise (1977) listed the species in his checklist. A survey of the New Zealand collections did not turn up any specimen of *Athysanus* Burmeister and the genus is not believed to occur in this country. Recently, three specimens fitting White's original description – one labeled 'lectotype' and two labeled 'paralectotype' – were located in the Perth Museum, Scotland. It appears that the lectotype designation has not in fact been published and this designation is validated here to ensure the correct recognition of the species. Examination of the external morphology of the Perth Museum specimens, including the configuration of the genitalia of the male lectotype, and comparison with the holotype of *Arawa salubris* Knight, 1975, revealed the two species to be the same. Consequently, they are synonymised here and White's species is recombined within the genus *Arawa*.

***Arawa novella* (Metcalf, 1967)^N**

Deltocephalus montanus Evans, 1938: 16. Holotype* male (SAMA); South Australia, Mount Lofty. Preoccupied. *Deltocephalus novellus* Metcalf, 1967b: 1167. Replacement name for *Deltocephalus montanus* Evans. *Arawa novella*: Knight, 1975: 183.

Geographic distribution (Map p. 202). North Island: AK, CL, GB, HB, TO. South Island: NN–Dun Mountain (Knight, 1975). [WD]–"West coast" (Knight, 1975). Stewart Island (Knight, 1975). Offshore Islands: CH (Knight, 1976b). Extralimital range: Australia (continental, Tasmania).

Biology. Lowland, montane. Collected on *Phormium* (CH);

on grasses, *Medicago sativa*, and in pasture (elsewhere). Seasonality: November–April, August. Phloem-feeder. Wing condition: Submacropterous to macropterous.

References. Metcalf, 1967b: 1167 (catalogue, world; as *Deltocephalus novellus*). Knight, 1975 (biology, distribution, taxonomy), 1976b (biology, distribution). Wise, 1977: 79 (checklist, New Zealand). Day & Fletcher, 1994: 1205 (Australia, catalogue).

Notes. *Deltocephalus montanus* was erroneously synonymised with *Deltocephalus taedius* (Kirkaldy, 1906) by Evans (1966). *Deltocephalus taedius*, currently recorded as *nomen dubium* for Australia (Day & Fletcher, 1994), belongs in *Arawa* and could be synonymous with *A. pulchra* Knight, 1975, which occurs both in Australia and New Zealand, as discussed by Knight (1975) and Fletcher & Condello (1993). See also **Notes** under *A. pulchra*.

***Arawa pulchra* Knight, 1975^N**

Type photograph p. 153.

Arawa pulchra Knight, 1975: 185. Holotype male (NZAC ex BMNH); TO, Ohakune.

Geographic distribution (Map p. 202). North Island: TO–Ohakune. Extralimital range: Australia (continental).

Biology. [Montane.] Collected on grass. Seasonality: January. Phloem-feeder. Wing condition: Macropterous.

References. Knight, 1975 (biology, distribution, taxonomy, wing condition). Evans, 1977 (checklist). Wise, 1977: 79 (checklist, New Zealand). Day & Fletcher, 1994: 1206 (Australia, catalogue).

Notes. Knight (1975), Fletcher & Condello (1993), and Day & Fletcher (1994) suspected *A. pulchra* to be conspecific with *A. taedia* (Kirkaldy), currently recorded as *nomen dubium* for Australia (Queensland), but in the absence of males of Kirkaldy's species they were not able to confirm this. In New Zealand, *A. pulchra* is only known from the male holotype. See also **Notes** under *A. novella*.

***Arawa variegata* Knight, 1975^E**

Type photograph p. 153.

Arawa variegata Knight, 1975: 178. Holotype male (NZAC); MB, Richmond Range, Fell Peak.

Geographic distribution (Map p. 202). North Island: AK, BP, GB, ND, TO, WA, WN, WO. South Island: BR, FD, MB, NN. Offshore Islands: TH.

Biology. Lowland to subalpine. Collected on *Chionochloa australis*, *Medicago sativa*, grass and in pasture. Seasonality: November–June, mostly January–February. [Phloem-feeder.] Wing condition: Submacropterous to macropterous.

References. Knight, 1975 (biology, distribution, taxonomy). Evans, 1977 (checklist). Wise, 1977: 79 (checklist, New Zealand).

Notes. *Arawa variegata* was first recorded for New Zealand by Evans (1966) under the name *Deltocephalus taedius* (Kirkaldy, 1906), but it seems unlikely that it is the same as Kirkaldy's species, as discussed by Knight (1975). See also **Notes** under *A. novella* and *A. pulchra*.

Genus *Athysanus* Burmeister, 1838

(See Genus *Arawa* Knight, 1975)

Notes. *Athysanus negatus* White, 1879, listed by previous authors, is now placed in the genus *Arawa* Knight, 1975. *Athysanus* is not believed to occur in New Zealand.

Genus *Exitianus* Ball, 1929^N

Exitianus Ball, 1929: 5. Type species: *Cicadula exitiosa* Uhler, 1880, by original designation.

Mimodrylix Zachvatkin, 1935: 108. Type species: *Athysanus capicola* Stål, 1855, by original designation. Synonymised by Oman, 1936: 382.

Geographic distribution. Worldwide.

References. Evans, 1966 (Australia, New Zealand, taxonomy), 1977 (notes). Metcalf, 1967a: 308–335 (catalogue, world). Ross, 1968 (Palaeartic, revision). Knight, 1976b (New Zealand, Southwest Pacific, taxonomy). Wise, 1977: 80 (checklist, New Zealand). Oman *et al.*, 1990: 213 (bibliography, checklist, genera, world). Day & Fletcher, 1994: 1206–1207 (Australia, catalogue).

Exitianus plebeius (Kirkaldy, 1906)^N

Nephotettix plebeius Kirkaldy, 1906: 331. Lectotype male (designated by Fletcher & Condello, 1993; BPBM); [Australia] Queensland, Cairns.

Exitianus plebeius: Metcalf, 1967a: 331.

Eutettix norrisi Evans, 1938: 14. Holotype* male (SAMA); Western Australia, Crawley. Synonymised by Ross, 1968: 15.

Euscelis transversus Metcalf, 1946a: 122. Holotype* female (BPBM); Guam, Piti. Synonymised by Ross, 1968: 15.

Geographic distribution (Map p. 203). Offshore Islands: KE–Raoul Island (NZAC). Extralimital range: Australia (continental, Norfolk Island), Guam, Papua New Guinea, Samoa.

Biology. [Lowland.] Collected on *Trifolium*, *Cynodon*, and *Kyllingia*; *Scaevola gracilis*; *Stenotaphrum glabrum* (in numbers); *Imperata*, *Pteridium*, *Solanum*, and *Sporobolus*; *Ageratum conyzoides*. Seasonality: September–November, January, May, June. Phloem-feeder (graminivore). Wing condition: Macropterous.

References. Evans, 1966 (Australia, New Zealand, taxonomy). Metcalf, 1967a: 331 (catalogue, world; as *Exitianus plebeius*). Eyles & Linnavuori, 1974 (biology, distribution, South Pacific, taxonomy). Knight, 1976b (biology, distribution, taxonomy). Evans, 1977 (notes). Wise, 1977: 80 (checklist, New Zealand). Day & Fletcher, 1994: 1207 (Australia, catalogue).

Notes. This species is widespread throughout the South Pacific. It is listed by Evans (1966) under the name *Exitianus capicola* (Stål), which was subsequently considered a *nomen dubium* by Ross (1968), who regarded *E. plebeius* Kirkaldy to be the correct name (Day & Fletcher, 1994).

Genus *Limotettix* Sahlberg, 1871^N

Limotettix Sahlberg, 1871: 224. Type species: *Cicada striola* Fallén, 1806, designated by Van Duzee, 1892: 306.

Drylix Edwards, 1922: 206. Type species: *Cicada striola* Fallén, 1806, designated by Ball, 1929: 6 (hence *Drylix* is an objective synonym of *Limotettix*). Synonymised by Lindberg, 1924: 44.

Geographic distribution. Australian Region (continental Australia, New Zealand), Nearctic Region, Palaeartic Region.

References. Evans, 1966 (Australia, New Zealand, taxonomy). Metcalf, 1967a: 128–160 (catalogue, world). Knight, 1975 (New Zealand, revision). Oman *et al.*, 1990: 225 (bibliography, checklist, genera, world). Day & Fletcher, 1994: 1208 (Australia, catalogue). Fletcher, 2000 (Australia, taxonomy).

Limotettix awae (Myers, 1924)^E

Type photograph p. 154.

Cicadula awae Myers, 1924a: 182. Lectotype male (designated by Knight, 1975; NZAC ex BMNH); AK, Auckland.

Limotettix awae: Knight, 1975: 171.

Geographic distribution (Map p. 204). North Island: AK, GB, ND, WN. South Island: BR, CO, FD, MC, MK, NN, OL, SL, WD. Offshore Islands: CH.

Biology. Lowland to subalpine. Collected in open and semi-open swampy habitats, often bordering lagoons, lakes and streams; mostly on grass (including tussock) and sedges, also in mixed pastures and on various low plants (e.g., small-leaved *Coprosma*). Seasonality: December–April. [Phloem-feeder.] Wing condition: Submacropterous to macropterous (mainly the latter).

References. Metcalf, 1967b: 1960 (catalogue, world; as *Cicadula awae*). Knight, 1975 (biology, distribution, taxonomy), 1976b (distribution). Evans, 1977 (notes). Wise, 1977: 79 (checklist, New Zealand).

***Limotettix harrisi* Knight, 1975^E**

Type photograph p. 154.

Limotettix harrisi Knight, 1975: 175. Holotype male (NZAC ex BMNH); TO, Ohakune.

Geographic distribution (Map p. 204). North Island: TO–Ohakune.

Biology. [Montane.] Habitat and seasonality: Unknown. [Phloem-feeder.] Wing condition: Macropterous.

References. Knight, 1975 (distribution, taxonomy; wing condition, genus *Limotettix*). Evans, 1977 (checklist). Wise, 1977: 79 (checklist, New Zealand).

***Limotettix pallidus* Knight, 1975^E**

Type photograph p. 154.

Limotettix pallidus Knight, 1975: 173. Holotype male (NZAC); MK, Tasman Valley, North of Lake Pukaki.

Geographic distribution (Map p. 204). South Island: MK–Mount Cook National Park, Mount Sebastopol, Red Lakes [=Tarns] (Knight, 1975); Tasman Valley (Knight, 1975), Acland Lagoon (Knight, 1975); Tasman Valley, North of Lake Pukaki (NZAC).

Biology. Montane, subalpine. Collected mostly on grass and sedges, in open and semi-open, often humid habitats; also on subalpine tussock grass and shrubs. Seasonality: February. [Phloem-feeder] Wing condition: Macropterous.

References. Evans, 1966 (Australia, New Zealand, taxonomy). Knight, 1975 (biology, distribution, taxonomy; wing condition, genus *Limotettix*). Evans, 1977 (checklist). Wise, 1977: 79 (checklist, New Zealand).

***Limotettix pullatus* (Evans, 1942)^N**

Deltocephalus pullatus Evans, 1942a: 148. Holotype female (BMNH); Western Australia, Yankep.

Limotettix condylus Knight, 1975. Holotype male (QM); ND, Spirits Bay. Synonymised by Day & Fletcher, 1994: 1208.

Limotettix pullatus: Day & Fletcher, 1994: 1208.

Geographic distribution (Map p. 204). North Island: ND–Spirits Bay (Knight, 1975; as *L. condylus*). Te Pahi (Knight, 1975; as *L. condylus*). Extralimital range: Australia (continental, Tasmania).

Biology. [Lowland, coastal.] Collected on sedges among *Leptospermum* and on *Leptospermum* itself. Seasonality: January. Phloem-feeder. Wing condition: Macropterous.

References. Evans, 1966 (taxonomy; as *Deltocephalus pullatus*). Metcalf, 1967b: 1184 (catalogue, world; as *Deltocephalus pullatus*). Knight, 1975 (biology, distribution, taxonomy; as *L. condylus*; wing condition, genus *Limotettix*). Evans, 1977 (checklist; as *Limotettix condylus*). Wise, 1977: 79 (checklist, New Zealand; as *L. condylus*). Day & Fletcher, 1994: 1208 (Australia, catalogue).

Genus *Scaphetus* Evans, 1966^E

Scaphetus Evans, 1966: 237. Type species: *Scaphetus brunneus* Evans, 1966, by original designation.

Geographic distribution. New Zealand.

References. Knight, 1975 (revision). Wise, 1977: 80 (checklist, New Zealand). Oman *et al.*, 1990: 249 (bibliography, checklist, genera, world).

***Scaphetus brunneus* Evans, 1966^E**

Type photograph p. 163.

Scaphetus brunneus Evans, 1966: 237. Lectotype male (designated by Knight, 1975; MONZ); ND, Bay of Islands, Paihia.

Geographic distribution (Map p. 209). North Island: AK, BP, CL, HB, ND, RI, TK, TO, WN, WO. South Island: BR, DN, MB, NN, OL, SD, SL, WD. Stewart Island.

Biology. Lowland, montane. Collected in and around forests (e.g., *Beilschmiedia tarairi*, podocarps, *Nothofagus*), including forest remnants and regenerating forests, and shrublands; on *Blechnum*, *Dryopteris* [= *Pneumatopteris*] *pennigera*, *Hebe–Uncinia* associations, *Kunzea ericoides*, *Metrosideros perforata*, and on general forest undergrowth; also from moss and leaf litter (in winter). Seasonality: Throughout the year, mostly January–March. [Phloem-feeder.] Wing condition: Submacropterous, nearly macropterous.

References. Knight, 1975 (biology, distribution, taxonomy). Wise, 1977: 80 (checklist, New Zealand).

***Scaphetus simus* Knight, 1975^E**

Type photograph p. 163.

Scaphetus simus Knight, 1975: 196. Holotype male (NZAC); NN, Nelson.

Geographic distribution (Map p. 209). North Island: WN (Knight, 1975). South Island: BR, CO, KA, MC, MK, NN, SL. Stewart Island.

Biology. Lowland, montane. Collected on *Coprosma repens*, *Nothofagus* (including *N. fusca* var. *colensoi*, *N. fusca*, *N. solandri*), and undetermined low shrubs; also on coastal scrub vegetation. Seasonality: September–June. [Phloem-feeder.] Wing condition: Submacropterous, nearly macropterous.

References. Knight, 1975 (biology, distribution, taxonomy). Evans, 1977 (checklist). Wise, 1977: 80 (checklist, New Zealand).

Note. Knight (1975) recorded this species from “Puhi Puhi Res.,” Auckland Region (northern North Island), which probably should have been cited as Puhi Puhi Reserve, Kaikoura Region (KA), in the northeast of the South Island.

Tribe DELTOCEPHALINI

Reference. Webb & Viraktamath, 2009 (checklist, revision, world).

Genus *Horouta* Knight, 1975^N

Horouta Knight, 1975: 205. Type species: *Horouta inconstans* Knight, 1975, by original designation.

Geographic distribution. Australia (continental, Tasmania), New Zealand.

References. Knight, 1975 (New Zealand, revision). Evans, 1977 (checklist). Wise, 1977: 80 (checklist, New Zealand). Oman *et al.*, 1990: 218 (bibliography, checklist, genera, world). Fletcher, 2004 (Australia, New Zealand, revision).

Note. This genus was recently revised by Fletcher (2004), who listed six other species occurring in Australia.

Horouta inconstans Knight, 1975^E

Type photograph p. 154.

Horouta inconstans Knight, 1975: 206. Holotype male (NZAC); MK, Mount Cook National Park, Hooker Valley, 3.2 km North of Hermitage.

Geographic distribution (Map p. 203). South Island: BR, CO, DN, FD, MB, MC, MK, NC, NN, OL, SC, SL.

Biology. Lowland to subalpine. Collected mostly on grass, including *Agrostis tenuis*, tussock (adults, nymphs), low plants and shrubs, in open or semi-open (e.g., edge of *Nothofagus* forest, eroded tussock area), sometimes marshy habitats (including salt marshes); also on young pastures and *Brassica rapa*; once taken on arid hillside vegetation. Seasonality: November–April. [Phloem-feeder.] Wing condition: Macropterous or brachypterous (the latter form occurs mostly in females found at higher altitude).

References. Knight, 1975 (biology, distribution, taxonomy, wing condition). Evans, 1977 (checklist). Wise, 1977: 80 (checklist, New Zealand). Fletcher, 2004 (biology, distribution, taxonomy).

Genus *Maiestas* Distant, 1917^N

Maiestas Distant, 1917: 312. Type species: *Maiestas illustris* Distant, 1917, by monotypy.

Togacephalus Matsumura, 1940: 38. Type species: *Deltocephalus distinctus* Motschulsky, 1859, by original designation. Synonymised by Webb & Viraktamath, 2009: 14. Treated as a subgenus of *Recilia* by Lee, 1979: 409, Kwon & Lee, 1979: 74 and Day & Fletcher, 1994: 1203, and synonymised with *Recilia* by Dash & Viraktamath, 1998: 4.

Inazuma Ishihara, 1953: 15. Type species: *Deltocephalus dorsalis* Motschulsky, 1859, by original designation. Synonymised by Webb & Viraktamath, 2009: 14. Synonymised with *Recilia* by Nielson, 1968: 315 and Dash & Viraktamath, 1998: 4; treated as a subgenus of

Recilia by Lee, 1979: 405 and Kwon & Lee, 1979: 80 and Day & Fletcher, 1994: 1204.

Inemadara Ishihara, 1953: 15. Type species: *Deltocephalus oryzae* Matsumura, 1902, by original designation. Synonymised by Webb & Viraktamath, 2009: 14. Synonymised with *Recilia* by Nast, 1972: 343 and Dash & Viraktamath, 1998: 5 and with *Recilia* (*Togacephalus*) by Kwon & Lee, 1979: 74.

Insulanus Linnavuori, 1960a: 303 (as subgenus of *Deltocephalus*). Type species: *Stirellus subviridis* Metcalf, 1946a, by original designation. Synonymised by Webb & Viraktamath, 2009: 14. Synonymised with *Recilia* by both Knight, 1975: 203 and Linnavuori, 1975: 617. Treated as a subgenus of *Recilia* by Day & Fletcher, 1994: 1203.

Geographic distribution. Ethiopian Region, Palaearctic Region, Oriental Region, Australian Region; Pacific Islands.

References. Metcalf, 1967a: 2175 (catalogue, world). Oman *et al.*, 1990: 227 (bibliography, checklist, genera, world). Webb & Viraktamath, 2009 (checklist, revision, world).

Note. New Zealand species listed by previous authors under *Recilia* were transferred to the genus *Maiestas* Distant, 1917, by Webb & Viraktamath (2009).

Maiestas knighti Webb & Viraktamath, 2009^N

Maiestas knighti Webb & Viraktamath, 2009: 43. Holotype male* (BMNH): MK, Tasman Valley, Glentanner Stn [Glentanner Station]

Deltocephalus hospes Kirkaldy, 1904: 177. New Zealand, misidentification (Knight, 1975: 202).

Deltocephalus (*Insulanus*) *hospes* (Kirkaldy): Fiji, misidentification (Linnavuori, 1960a: 45.)

Deltocephalus coronifer Marshall, *sensu* Evans, 1966: 240: Australia, misidentification.

Deltocephalus (*Recilia*) *hospes* Kirkaldy: New Zealand, erroneous recording (Wise, 1977: 80).

Recilia hospes (Kirkaldy): Australia, misidentification (Fletcher & Condello, 1993: 43–44).

Recilia (*Recilia*) *hospes* (Kirkaldy): Australia, erroneous recording (Day & Fletcher, 1994: 1202).

Geographic distribution (Map p. 204). North Island: AK, ND, TO, WI, WN. South Island: CO, FD, MC, MK, OL, WD. Offshore Islands: CH, TH. Extralimital range: Australia (continental), Fiji, Guam, Papua New Guinea.

Biology. Lowland, montane. Collected on grass, sedges, low plants, and shrubs; seashore and dune vegetation. Seasonality: November–April. Phloem-feeder. Wing condition: Macropterous.

References. Metcalf, 1967a: 110 (catalogue, world; as *Stirellus hospes*). Knight, 1975 (biology, distribution, taxonomy; as *Deltocephalus* (*Recilia*) *hospes*). Wise, 1977: 80 (checklist, New Zealand; as *Deltocephalus* (*Recilia*) *hospes*). Day & Fletcher, 1994: 1202–1203 (Australia, catalogue; as *Recilia* (*Recilia*) *hospes*). Webb & Viraktamath, 2009 (checklist, taxonomy).

Notes. *Maiestas knighti* was described and illustrated by Evans (1966) from Australia as *Deltocephalus coronifer* Marshall, 1866, by Knight (1975) from New Zealand as *Deltocephalus hospes* Kirkaldy and by Linnavuori (1960a) from Fiji as *Deltocephalus (Insulanus) hospes* Kirkaldy. Subsequent studies of *hospes* from its type locality (Hawaii) by Knight and of the lectotype by Webb & Viraktamath (2009) led to the conclusion that *Maiestas hospes* is so far known only from Hawaii and that material from other Pacific localities refers to this new species.

***Maiestas samuelsoni* (Knight, 1976)^N**

Type photograph p. 155.

Deltocephalus samuelsoni Knight, 1976b: 96. Holotype male (NZAC); KE, Raoul Island, North Terrace.

Maiestas samuelsoni: Webb & Viraktamath, 2009: 19.

Geographic distribution (Map p. 204). Offshore Islands: KE–Meyer Island (Knight, 1976b). Raoul Island (NZAC). Extralimital range: Australia (Norfolk Island only), Fiji, New Caledonia, Phillipines.

Biology. [Lowland.] Collected on *Ageratum conyzoides*, *Cynodon*, *Kyllingia*, *Trifolium*; also on grass in general, and in leaf litter. Seasonality: September–October, January, April–May. [Phloem-feeder.] Wing condition: Macropterous.

References. Knight, 1976b (biology, distribution, taxonomy; as *Deltocephalus samuelsoni*). Wise, 1977: 80 (checklist, New Zealand; as *Deltocephalus (Recilia) samuelsoni*). Webb & Viraktamath, 2009 (checklist, taxonomy).

Notes. Knight (1976b) stated that this species is closely related to *hospes*. Webb & Viraktamath (2009) noted that *samuelsoni* differs from *hospes* only in its narrower subgenital plate.

***Maiestas vetus* (Knight, 1975)^N**

Type photograph p. 155.

Deltocephalus (Recilia) vetus Knight, 1975: 203. Holotype male (NZAC); MK, Mount Cook National Park, Tasman Valley, 6.4 km South of Ball Hut.

Recilia (Togacephalus) vetus: Day & Fletcher, 1994: 1204. *Maiestas vetus*: Webb & Viraktamath, 2009: 19.

Geographic distribution (Map p. 204). North Island: AK, CL, HB, ND, TO, WN, WO. South Island: MK, NC, NN, OL, SD, WD. Offshore Islands: KE–North Meyer Island (Knight, 1976b; as *Deltocephalus vetus*). Raoul Island (Knight, 1976b; as *Deltocephalus vetus*). Extralimital range: Australia (continental).

Biology. Lowland, montane. Collected from grass, sedges, and low shrubs; also from an *Acacia* stump, *Coprosma propinqua*–*Leptospermum scoparium* associations, ferns,

moss, *Nothofagus*, rotten *Podocarpus*, *Pennisetum*, *Cortaderia*, rushes; leaf litter (KE). Seasonality: November–July, mostly February–March. Phloem-feeder. Wing condition: Macropterous.

References. Knight, 1975 (biology, distribution, taxonomy; as *Deltocephalus (Recilia) vetus*). Evans, 1977 (checklist; as *Deltocephalus (Recilia) vetus*). Wise, 1977: 80 (checklist, New Zealand; as *Deltocephalus (Recilia) vetus*). Day & Fletcher, 1994: 1204 (Australia, catalogue; as *Recilia (Togacephalus) vetus*). Webb & Viraktamath, 2009 (checklist, taxonomy).

Genus *Recilia* Edwards, 1922

(See Genus *Maiestas* Distant, 1917)

References. Metcalf, 1967a: 934–942 (catalogue, world; as *Recilia*). Knight, 1975 (New Zealand, revision; as *Deltocephalus (Recilia)*). Wise, 1977: 80 (checklist, New Zealand; as *Deltocephalus (Recilia)*). Oman *et al.*, 1990: 247 (bibliography, checklist, genera, world; as *Recilia*). Day & Fletcher, 1994: 1202 (Australia, catalogue; as *Recilia*). Webb & Viraktamath, 2009 (checklist, revision, world).

Notes. Day & Fletcher (1994) gave an historical overview of the nomenclatural status of *Recilia* and its various subgeneric arrangements. New Zealand species listed by previous authors under *Recilia* were transferred to the genus *Maiestas* Distant, 1917, by Webb & Viraktamath (2009) together with most world species previously placed in *Recilia (Togacephalus)* Matsumura, 1940

Tribe MACROSTELINI

Reference. Knight & Webb, 1993 (biology, phylogeny, virus vector).

Genus *Balclutha* Kirkaldy, 1900^{A?}

Synonymy (see Knight, 1987; Day & Fletcher, 1994).

Geographic distribution. Worldwide.

References. Davidson & DeLong, 1935 (Nearctic, revision). Evans, 1966 (Australia, key, New Zealand, taxonomy). Blocker, 1967 (taxonomy, Western Hemisphere). Metcalf, 1967c: 2382–2441 (catalogue, world). Knight, 1976b (Kermadec Islands, taxonomy). Wise, 1977: 80 (checklist, New Zealand). Knight, 1987 (South Pacific revision, world checklist). Oman *et al.*, 1990: 193–194 (bibliography, checklist, genera, world). Day & Fletcher, 1994: 1217–1219 (Australia, catalogue).

Notes. Prior to 1987, *Balclutha viridinervis* Matsumura, 1914, was the only *Balclutha* species recorded from New Zealand (Kermadec Islands only). Knight (1976b), how-

ever, indicated the presence on the Kermadec Islands of a second species “similar to [*B.*] *filum* Linnavuori [=*B. lucida* (Butler)].” Knight (1987) listed *B. incisa* (Matsumura, 1902), *B. lucida* (Butler, 1877) and *B. rieki* Knight, 1987, as new records for New Zealand, with *B. incisa* and *B. lucida* specimens reported to be deposited in the DSIR [=NZAC] collection. Although the material examined by Knight has not been found, a single male specimen of *B. incisa* has been located in unsorted NZAC material and confirms this species in the North Island. The presence of *B. lucida* – a senior synonym of *B. filum* – on the Kermadec Islands has also been confirmed through identification of previously undetermined NZAC material. The New Zealand record of *B. rieki* is based on a single collecting event made, according to Knight (1987), in 1985 in the Auckland region, that included three males and three females. These specimens, which could not be located either, were included by Knight (1987) in his series of *B. rieki* paratypes that also includes several specimens from many other Australasian countries and territories. The present authors do not consider *B. rieki* to have established itself in the North Island of New Zealand. This leaves New Zealand with three species of *Balclutha*, *B. incisa* in the North Island and *B. viridinervis* and *B. lucida*, both occurring on the Kermadec Islands, not on New Zealand’s main islands. See also **Appendix D**.

***Balclutha incisa* (Matsumura, 1902) ^A**

Synonymy (see Metcalf, 1967c; Knight, 1987; Day & Fletcher, 1994).

Geographic distribution (Map p. 202). AK–Huia Dam (NZAC). Extralimital range: Cosmopolitan.

Biology. Lowland. Found on grass. Recorded (outside New Zealand) on *Acacia*, *Digitaria sanguinalis*, *Ehrharta longiflora* in Australia; on *Cynodon dactylon*, *Cyperus ferax*, *Daucus carota*, *Eriochloa subglabra*, *Ipomoea batatas*, *Oryza sativa*, *Panicum barbinode*, *Saccharum*. Seasonality: Unknown. Phloem-feeder. Wing condition: Macropterous.

References. Metcalf, 1967c: 2450 (catalogue, world as *Nesosteles incisus*). Knight, 1987 (checklist, biology, distribution, taxonomy). Day & Fletcher, 1994: 1218 (Australia, catalogue). Moir *et al.*, 2003 (Australia, distribution). Narhardiyati & Bailey, 2005 (Australia, distribution, biology).

Notes. Knight’s (1987) New Zealand record of *B. incisa* was based on specimens apparently from the DSIR (=NZAC) collection. However, this material could not be located. Currently, the only evidence of this species occurring in this country is from a newly identified specimen in NZAC.

***Balclutha lucida* (Butler, 1877) ^{A?}**

Synonymy (see Metcalf, 1967c; Knight, 1987; Day & Fletcher, 1994).

Geographic distribution (Map p. 202). Offshore Islands: KE–Raoul Island (NZAC). Extralimital range: Australian Region (including Australia, New Caledonia, Papua New Guinea, Polynesia, Vanuatu), Nearctic Region, Neotropical Region, Ethiopian Region, and Oriental Region.

Biology. [Lowland.] Hostplant: *Oryza sativa*. Seasonality: Unknown. Phloem-feeder. Wing condition: Macropterous.

References. Metcalf, 1967c: 2409 (catalogue, world). Eyles & Linnavuori, 1974 (biology, distribution, South Pacific, taxonomy). Knight, 1987 (checklist, distribution, taxonomy). Wilson & Claridge, 1991 (biology). Day & Fletcher, 1994: 1218 (Australia, catalogue).

***Balclutha viridinervis* Matsumura, 1914 ^{A?}**

Synonymy (see Metcalf, 1967c; Knight, 1987).

Geographic distribution (Map p. 202). Offshore Islands: KE–Raoul Island (Knight, 1976b; as *B. flexuosa*). Extralimital range: Australia (continental), India, South East Asia, Thailand, western Pacific.

Biology. [Lowland.] Collected on *Kyllingia* (in large numbers); also on *Ageratum conyzoides*, *Cynodon*, *Nicotiana tabacum*, *Stenotaphrum glabrum*, *Trifolium*. Hostplants: *Oryza*, *Cajanus*. Seasonality: September, October (mostly). Phloem-feeder. Wing condition: Macropterous.

References. Metcalf, 1967c: 2440 (catalogue, world). Knight, 1976b (biology, distribution, taxonomy; as *B. flexuosa*). Wise, 1977: 80 (checklist, New Zealand; as *B. flexuosa*). Knight, 1987 (checklist, distribution, taxonomy).

Genus *Macrosteles* Fieber, 1866 ^A

Synonymy (see Metcalf, 1967c; Oman *et al.*, 1990).

Geographic distribution. Ethiopian Region, Holarctic Region; New Zealand (adventive).

References. Beirne, 1952 (Nearctic Region, revision). Metcalf, 1967c: 2486–2611 (catalogue, world). Knight, 1975 (New Zealand, taxonomy). Wise, 1977: 80 (checklist, New Zealand). Oman *et al.*, 1990: 227 (bibliography, checklist, genera, world).

Note. This genus has not been recorded from Australia.

***Macrosteles fieberi* (Edwards, 1889) ^A**

Synonymy (see Metcalf, 1967c; Knight, 1975).

Geographic distribution (Map p. 204). South Island: CO–Old Man Range, 15 km S of Alexandra (NZAC). MK–

Mount Cook National Park, Mount Sebastopol, Red Lakes [=Tams] (Knight, 1975; BMNH); first New Zealand record, 1972 (Knight, 1975). Extralimital range: Holarctic Region.

Biology. [Montane, subalpine.] Collected on tussock grass and shrubs in marshy areas. In Europe, also occurs in marshy areas. Seasonality: February. [Phloem-feeder.] Wing condition: Macropterous.

References. Ribaut, 1952 (biology, Europe). Metcalf, 1967c: 2527–2531 (catalogue, world). Knight, 1975 (biology, distribution, taxonomy). Evans, 1977 (notes). Wise, 1977: 80 (checklist, New Zealand).

Genus *Nesoclutha* Evans, 1947^N

Nesoclutha Evans, 1947c: 126. Type species: *Nesoclutha obscura* Evans, 1947c, by monotypy.

Irunula Ribaut, 1948: 58. Type species: *Cicadula erythrocephala* Ferrari, 1882, by original designation. Synonymised by Vilbaste, 1976: 28.

Geographic distribution. Australian Region (continental Australia, Lord Howe Island, New Caledonia, New Zealand, Norfolk Island, Tasmania), Ethiopian Region, Palaearctic Region.

References. Evans, 1966 (Australia, key, New Zealand, taxonomy). Metcalf, 1967c: 2442 (catalogue, world). Knight, 1975 (New Zealand, taxonomy). Wise, 1977: 80 (checklist, New Zealand). Oman *et al.*, 1990 (bibliography, checklist, genera, world). Day & Fletcher, 1994: 1220 (Australia, catalogue).

Nesoclutha phryne (Kirkaldy, 1907)^N new combination

Nesosteles phryne Kirkaldy, 1907a: 66. Lectotype male (designated by Fletcher & Condello, 1993; BPBM); Australia, New South Wales, Mittagong.

Eusceloscopus pallidus Evans, 1942a: 147. Holotype* male (BMNH); Australia, Western Australia, Yancheop. Synonymised by Fletcher & Condello, 1993, through lectotype designation of *N. phryne* (see **Notes** below).

Nesoclutha obscura Evans, 1947c: 126. Holotype* male (BMNH); Australia, Victoria, Melbourne. Synonymised by Evans, 1966: 252.

Nesoclutha pallida: Evans, 1966: 252.

Common name: Australian Grass Leafhopper.

Geographic distribution (Map p. 205). North Island: AK, BP, CL, ND, TK, WN. South Island: BR, CO, DN, MB, MC, MK, NC, NN, OL, SL. Extralimital range: Australian Region (continental Australia, Java, Lord Howe Island, New Caledonia, Norfolk Island, Tasmania).

Biology. Lowland, montane. Collected mostly on grass (including tussock), low plants and shrubs; also on bracken fern (*Pteridium esculentum*), *Nothofagus*, young pasture,

legumes, and *Brassica rapa*. Seasonality: November–July. Phloem-feeder. Wing condition: Macropterous. Economic importance: In Australia, reported to be the vector of cereal chlorotic mottle rhabdovirus, chloris striate mosaic geminivirus, paspalum striate mosaic geminivirus, and the causative agent of maize wallaby ear.

References. Grylls, 1963 (economic importance). Evans, 1966 (Australia, taxonomy; as *Balclutha phryne* and *Nesoclutha pallida*). Metcalf, 1967c: 2442 (catalogue, world; as *Nesoclutha obscura*). Knight, 1975 (biology, distribution, taxonomy; as *Nesoclutha pallida*), 1976b (distribution; as *Nesoclutha pallida*). Greber, 1977 (economic importance). Evans, 1977 (notes; as *Nesoclutha pallida*). Wise, 1977: 80 (checklist, New Zealand; as *Nesoclutha pallida*). Day & Fletcher, 1994: 1220 (Australia, catalogue; as *Nesoclutha pallida*).

Notes. Day & Fletcher (1994) explained that the designation of a lectotype for *N. phryne* Kirkaldy (by Fletcher & Condello, 1993) has established this name as a senior synonym of *N. pallida*, but that the widespread use of the latter name justified application of the syntype series of the Kirkaldy material to be set aside to maintain nomenclatural stability. Day & Fletcher (1994) intended to prepare an application to the International Commission on Zoological Nomenclature along these lines, but apparently did not go ahead with this. Consequently, the correct name under the rule of priority is *N. phryne*.

Tribe OPSIINI

Genus *Orosius* Distant, 1918^A

Orosius Distant, 1918: 85. Type species: *Orosius albicinctus* Distant, 1918, by original designation.

Nesaloha Oman, 1943a: 33. Type species: *Nesaloha cantonis* Oman, 1943a, by original designation. Synonymised by Evans, 1947a: 236.

Geographic distribution. Australian Region (continental Australia, New Zealand, Norfolk Island, Melanesia, Papua New Guinea, Polynesia), Ethiopian Region, Oriental region, Palaearctic Region.

References. Evans, 1966 (Australia, New Zealand, taxonomy). Ghauri, 1966 (revision). Metcalf, 1967b: 1670–1672 (catalogue, world). Knight, 1976b (New Zealand, Southwest Pacific, taxonomy). Evans, 1977 (notes). Wise, 1977: 80 (checklist, New Zealand). Oman *et al.*, 1990: 237 (bibliography, checklist, genera, world). Day & Fletcher, 1994: 1211 (Australia, catalogue).

***Orosius argentatus* (Evans, 1938)^A**

Thamnotettix argentata Evans, 1938: 15. Holotype* male (AM); Australia, Victoria, Burnley.

Orosius argentatus: Oman, 1949: 11.

Nesophrosyne argentatus: Linnavuori, 1960b: 320.

Orosius argentatus: Ghauri, 1966: 242.

Geographic distribution (Map p. 207). Offshore Islands: KE–Meyer Island (Knight, 1976b). Raoul Island (Knight, 1976b). South Meyer Island (Knight, 1976b). Extralimital range: Africa, Australia (continental, Norfolk Island), Fiji, Java, Melanesia, New Britain, Polynesia.

Biology. [Lowland.] Collected on *Ageratum*, *Carex*, and grasses (in numbers); also on leaves of agave and on sedge. Hostplants: A wide variety of plants in many families. Seasonality: October–December. [Phloem-feeder.] Wing condition: Macropterous. Economic importance: Well-known vector of plant phytoplasma diseases in Australia.

References. Evans, 1966 (Australia, New Zealand, taxonomy). Metcalf, 1967b: 1671–1672 (catalogue, world). Eyles & Linnavuori, 1974 (biology, distribution, South Pacific, taxonomy). Knight, 1976b (distribution). Wise, 1977: 80 (checklist, New Zealand). Fletcher *et al.*, 1991b (economic importance). Day & Fletcher, 1994: 1211 (Australia, biology, catalogue).

Notes. Additional disease vector information can be found in Day & Fletcher (1994). Recently, use of this name in Australia has declined in favour of *Orosius orientalis* (Matsumura). This follows a synonymy between the two names proposed by Kwon & Lee (1979) based on comparison between Australian and Korean material. Subsequent workers did not follow this proposal because *O. orientalis* was described from Japan and not Korea. Specimens from Japan have now been compared with Australian material by the second author (M. Fletcher) and Kwon & Lee's (1979) proposal appeared to be valid. However, more recent molecular work comparing CO1 gene sequences from Japan and Australia (M. Fletcher, A. Mitchell & H. Löcker, unpublished data) indicates that *O. argentatus* may be a valid name for at least part of the Australian fauna. Consequently, the authors are being cautious in retaining use of this name for the New Zealand where molecular work is also needed to confirm the identity and ascertain the origin of New Zealand populations.

Subfamily EUACANTHELLINAE**Tribe EUACANTHELLINI****Genus *Euacanthella* Evans, 1938^A**

Euacanthella Evans, 1938: 8. Type species: *Euacanthella palustris* Evans, 1938, by original designation.

Geographic distribution. Australia (continental, Tasmania); New Zealand (adventive).

References. Metcalf, 1963b: 248 (catalogue, world). Evans, 1966 (Australia, New Zealand, taxonomy). Knight, 1974b (New Zealand, taxonomy). Wise, 1977: 78 (checklist, New Zealand). Oman *et al.*, 1990: 211 (bibliography, checklist, genera, world). Day & Fletcher, 1994: 1144 (Australia, catalogue).

***Euacanthella palustris* Evans, 1938^A**

Euacanthella palustris Evans, 1938: 8. Holotype* female (SAMA, collection J.W. Evans); [Australia] Tasmania, Snug.

Euacanthella insularis Evans, 1938: 9. Holotype male (SAMA); [Australia] Tasmania, Hobart. Synonymised by Evans, 1966: 143.

Euacanthella brunnea Evans, 1966: 143. Holotype* female (AMNZ); AK, Auckland, Portland Road. Synonymised by Evans, 1974: 173.

Geographic distribution (Map p. 203). North Island: AK, CL, HB, ND. South Island: NN–Maitai [River Valley], Smith's Ford (Knight, 1974b). First New Zealand record: AK, Auckland, 1956 (Evans, 1966; as *E. brunnea*). Extralimital range: Australia (New South Wales, Tasmania).

Biology. Lowland, coastal (mostly). Hostplants: A wide variety of plants in many families. Seasonality: January–May, July. Phloem-feeder. Wing condition: Brachypterous or macropterous.

References. Metcalf, 1963b: 248 (catalogue, world). Evans, 1966 (taxonomy; as *Euacanthella brunnea* and *E. palustris*). Knight, 1974b (biology, distribution, taxonomy). Wise, 1977: 78 (checklist, New Zealand). Day & Fletcher, 1994: 1144–1145 (Australia, catalogue).

Notes. This species was first described as *E. insularis* Evans, 1938, from Hobart, Tasmania, and later (Evans, 1966) under the name *brunnea*, from Auckland (Knight, 1974b). Evans (1938) described three species: *E. palustris*, *E. bicolor*; and *E. insularis*. In 1966 Evans synonymised *E. bicolor* and *E. insularis* under *E. palustris*, and added another species, *E. brunnea* from New Zealand. Later (Evans, 1974) he reinstated *E. bicolor* and synonymised *E. brunnea* and *E. palustris*. At the same time, Knight (1974b: 476) also synonymised *E. brunnea*, but under the name *E. insularis*. As Evans (1966) can be regarded as the first reviser and was certainly the first to propose the syn-

onymy between *E. palustris* and *E. insularis*, his use of the name *E. palustris* gives this name seniority over *E. insularis*. Day & Fletcher (1994) noted that the specimen in SAMA labelled as the holotype of *E. insularis* has label data which do not match the original published data. They recognised a different specimen from the J. W. Evans collection as the one which Evans had intended as the holotype. This specimen now bears a label identifying it as the holotype of *E. insularis*, determined by M. J. Fletcher, 1994.

Subfamily EUPELICINAE

Tribe PARADORYDIINI

References. Evans, 1937 (Australia, revision); Morrison, 1973 (Oriental Region, revision).

Genus *Paradorydium* Kirkaldy, 1901^N

Dorydium Burmeister, 1838: pls 10, 11, 17, 20. Type species: *Dorydium paradoxum* Burmeister, 1838, by original designation. Preoccupied.

Paradorydium Kirkaldy, 1901: 339. Replacement name for *Dorydium* Burmeister.

Carphosoma Royer, 1907: 29. Unnecessary replacement name for *Dorydium* Burmeister.

Deltodorydium Kirkaldy, 1907a: 73 (as subgenus of *Paradorydium*). Type species: *Paradorydium brighami* Kirkaldy, 1907a, by original designation. Synonymised by Evans, 1937: 45.

Oman *et al.* (1990) list other synonyms from outside the Australian Region.

Geographic distribution. Australian Region (continental Australia, New Zealand), Ethiopian Region, Palaearctic Region.

References. Metcalf, 1963c: 106–114 (catalogue, world). Evans, 1966 (Australia, New Zealand, taxonomy). Knight, 1973a (New Zealand, revision). Oman *et al.*, 1990: 238–239 (bibliography, checklist, genera, world). Day & Fletcher, 1994: 1221 (Australia, catalogue).

Note. This genus is in need of more extensive collecting and ecological recording and, ultimately, of taxonomic revision.

Paradorydium aculeatum Knight, 1973^E

Type photograph p. 161.

Paradorydium aculeatum Knight, 1973a: 966. Holotype male (NZAC); CO, Mount Bitterness.

Geographic distribution (Map p. 208). South Island: CO–Mount Bitterness.

Biology. [Subalpine.] Collected in leaf litter. Seasonality: January. [Phloem-feeder.] [Wing condition: Forewings coriaceous, submacropterous; hindwings micropterous.]

References. Knight, 1973a (biology, distribution, taxonomy; wing condition, genus *Paradorydium*). Evans, 1977 (checklist). Wise, 1977: 78 (checklist, New Zealand).

Note. This taxon may be conspecific with *P. gourlayi* and/or *P. watti*.

Paradorydium cuspis Knight, 1973^E

Paradorydium cuspis Knight, 1973a: 968. Holotype* female (BMNH); NN, Mount Arthur.

Geographic distribution (Map p. 208). South Island: NN–Mount Arthur.

Biology. [Montane.] Habitat: Unknown. Seasonality: February. [Phloem-feeder.] [Wing condition: Forewings coriaceous, submacropterous; hindwings micropterous.]

References. Knight, 1973a (biology, distribution, taxonomy; wing condition, genus *Paradorydium*). Evans, 1977 (checklist). Wise, 1977: 78 (checklist, New Zealand).

Paradorydium gourlayi Evans, 1966^E

Type photograph p. 161.

Paradorydium gourlayi Evans, 1966: 139. Holotype female (NZAC); NN, Tahuna [=Tahunanui, Nelson].

Geographic distribution (Map p. 208). South Island: NN–Nelson, Tahunanui.

Biology. [Lowland.] Habitat: Unknown. Seasonality: February. [Phloem-feeder.] [Wing condition: Forewings coriaceous, submacropterous; hindwings micropterous.]

References. Knight, 1973a (biology, distribution, taxonomy; wing condition, genus *Paradorydium*). Evans, 1977 (notes). Wise, 1977: 78 (checklist, New Zealand).

Note. This taxon may be conspecific with *P. aculeatum* and/or *P. watti*.

Paradorydium insulare Evans, 1966^E

Type photograph p. 162.

Paradorydium insularis [*sic*] Evans, 1966: 139. Holotype male (MONZ); SD, Stephens Island.

Geographic distribution (Map p. 208). South Island: SD–Stephens Island.

Biology. [Lowland.] Habitat: Unknown. Seasonality: November, January. [Phloem-feeder.] [Wing condition: Forewings coriaceous, submacropterous; hindwings micropterous.]

Reference. Knight, 1973a (biology, distribution, taxonomy; wing condition, genus *Paradorydium*). Wise, 1977: 78 (checklist, New Zealand; as *P. insularis* [*sic*]).

Notes. The holotype is from Stephens Island, not Stewart Island as stated by Evans (1966). This species may be synonymous with *P. sertum*. *Paradorydium* is a neuter noun, therefore requiring an adjective with a neuter ending.

***Paradorydium philpotti* Myers, 1923^E**

Type photograph p. 162.

Paradorydium philpotti Myers, 1923a: 417. Holotype male (NZAC ex BMNH); FD, Hump Range [=Hump Ridge].

Paradorydium stewartensis Evans, 1966: 139. Holotype female (MONZ); Stewart Island, Port Pegasus. Synonymised by Knight, 1973a: 961.

Geographic distribution (Map p. 208). South Island: BR—Cape Foulwind, Okari River (Knight, 1973a). FD—Hump Ridge (NZAC). Stewart Island: Big South Cape Island (Knight, 1973a); Freshwater Creek area (Knight, 1973a); Port Pegasus (MONZ, NZAC) (Belltopper Falls, bush above (Knight, 1973a); Chase Island [=Pearl Island] (Knight, 1973a); Crooked Reach (Knight, 1973a)). Rakeahua Valley (NZAC).

Biology. [Lowland, montane.] Collected on foliage (several adults, nymphs), *Dracophyllum longifolium* (several adults); also on bracken fern (*Pteridium esculentum*) and from a swamp. Seasonality: October–January, February (mostly). [Phloem-feeder.] [Wing condition: Forewings coriaceous, submacropterous; hindwings micropterous.]

References. Metcalf, 1963c: 113 (catalogue, world). Evans, 1966 (taxonomy). Knight, 1973a (biology, distribution, taxonomy; wing condition, genus *Paradorydium*). Evans, 1977 (notes). Wise, 1977: 78 (checklist, New Zealand).

Note. Knight (1973a) only tentatively considered the Cape Foulwind specimen (a female) to be of this species although similar externally to specimens from Stewart Island.

***Paradorydium sertum* Knight, 1973^E**

Type photograph p. 162.

Paradorydium sertum Knight, 1973a: 966. Holotype male (NZAC); OL, Mount Coronet [=Coronet Peak].

Geographic distribution (Map p. 208). South Island: OL—Coronet Peak.

Biology. [Subalpine.] Habitat: Unknown. Seasonality: December. [Phloem-feeder.] [Wing condition: Forewings coriaceous, submacropterous; hindwings micropterous.]

References. Knight, 1973a (biology, distribution, taxonomy; wing condition, genus *Paradorydium*). Evans, 1977 (checklist). Wise, 1977: 78 (checklist, New Zealand).

Note. This taxon may be conspecific with *P. insulare*.

***Paradorydium watti* Knight, 1973^E**

Type photograph p. 162.

Paradorydium watti Knight, 1973a: 967. Holotype male (NZAC); MB, Awatere Valley, Molesworth.

Geographic distribution (Map p. 208). South Island: MB—Awatere Valley, Molesworth.

Biology. [Lowland.] Collected in moss. Seasonality: March. [Phloem-feeder.] [Wing condition: Forewings coriaceous, submacropterous; hindwings micropterous.]

References. Knight, 1973a (biology, distribution, taxonomy; wing condition, genus *Paradorydium*). Evans, 1977 (checklist). Wise, 1977: 78 (checklist, New Zealand).

Note. This taxon may be conspecific with *P. aculeatum* and/or *P. gourlayi*.

***Paradorydium westwoodi* (White, 1879)^E**

Dorydium westwoodi White, 1879: 215. Lectotype* female (designated by Knight, 1973a; BMNH); MC, near Christchurch.

[*Paradorydium westwoodi*: Kirkaldy 1909a: 28. Intended generic placement for this species.

Paradorydium westwoodi: Myers, 1923a: 416.

Notocephalius westwoodi: Evans, 1947b: 148. *Paradorydium westwoodi*: Evans, 1966: 138.

Geographic distribution (Map p. 208). South Island: MC—Banks Peninsula (Dyers Pass (NZAC); Governors Bay (Knight, 1973a); Sign of the Kiwi (NZAC)). Christchurch (Knight, 1973a), including Port Hills (NZAC).

Biology. [Lowland, montane.] Collected on *Poa caespitosa* [= *P. cita*] (adults, nymphs); on rushes; once on *Leptospermum scoparium*. Seasonality: November–December, April. [Phloem-feeder.] [Wing condition: Forewings coriaceous, submacropterous; hindwings micropterous.]

References. Evans, 1966 (taxonomy). Knight, 1973a (biology, distribution, taxonomy; wing condition, genus *Paradorydium*). Wise, 1977: 78 (checklist, New Zealand).

Subfamily IASSINAE**Tribe IASSINI****Genus *Batracomorpus* Lewis, 1834^N**

Batracomorpus Lewis, 1834: 51. Type species:

Batracomorpus irroratus Lewis, 1834, by monotypy.

Eurinoscopus Kirkaldy, 1906: 346. Type species:

Eurinoscopus lentiginosus Kirkaldy, 1906, by original designation. Synonymised by Linnavuori, 1960b: 238.

Ossana Distant, 1914: 518. Type species: *Ossana bicolor*

Distant, 1914, by original designation. Synonymised by

Linnavuori & Quarta, 1975: 30.

Batrachomorpus [*sic*]: Linnavuori, 1960b: 238.

Acojassus Evans, 1972: 656. Type species: *Acojassus*

montanus Evans, 1972, by original designation.

Synonymised by Knight, 1983: 31.

Edijassus Evans, 1972: 656. Type species: *Edijassus pal-*

lidus Evans, 1972, by original designation. Synonymised

by Knight, 1983: 31.

Geographic distribution. Worldwide.

References. Evans, 1966 (Australia, New Zealand, taxonomy; *Batrachomorphus* [sic]). Metcalf, 1966a: 118–133 (catalogue, world). Knight, 1974b (New Zealand, revision). Wise, 1977: 79 (checklist, New Zealand). Knight, 1983 (Australian and Oriental Regions, revision). Oman *et al.*, 1990: 194 (bibliography, checklist, genera, world). Day & Fletcher, 1994: 1185 (Australia, catalogue).

***Batrachomorphus adventitosus* Evans, 1966^N**

Type photograph p. 153.

Batrachomorphus [sic] *adventitosus* Evans, 1966: 207.

Holotype male (NZAC); ND, Whangarei.

Batrachomorphus adventitosus: Knight, 1974b: 490.

Geographic distribution (Map p. 202). North Island: AK, ND, TO, WN. South Island: DN, MC, MK, SL. Offshore Islands: TH. Extralimital range: Australian Region (continental Australia, Vanuatu).

Biology. [Lowland, montane.] Collected in large numbers on *Leptocarpus* [= *Apodasmia*] *similis* (adults) and *Plagianthus divaricatus* (adults, nymphs); in lesser numbers on *Hoheria glabrata* (adults, nymphs), *Plagianthus betulinus* [= *P. regius*] (adults), *Coprosma parviflora* (adults), *C. robusta* (nymphs); also found on *Juncus* (at base), *Kunzea ericoides*, *Leptospermum scoparium*, *Muehlenbeckia*, *Nothofagus solandri cliffortioides*, in *Nothofagus* scrub, on *Polystichum aculeatum*, and various grasses, low plants and shrubs. [Hostplants: *Plagianthus*, *Hoheria*, *Coprosma*.] Seasonality: November–March, May. Phloem-feeder. Wing condition: Submacropterous, nearly macropterous; forewings semi-coriaceous.

References. Knight, 1974b (biology, distribution, taxonomy). Wise, 1977: 79 (checklist, New Zealand). Knight, 1983 (biology, distribution, taxonomy). Day & Fletcher, 1994: 1186 (Australia, catalogue).

***Batrachomorphus angustatus* (Osborn, 1934)^{N?}**

Bythoscopus angustatus Osborn, 1934a: 166. Holotype* male (BMNH); Tonga, Vava'u, Neiafu.

Eurinoscopus punctatus Evans, 1940: 10. Holotype* male (QM); Australia, Queensland, Darling Downs. Synonymised by Knight, 1983: 51.

Iassus angustatus: Metcalf, 1966a: 45.

Batrachomorphus [sic] *punctatus*: Evans, 1966: 206.

Batrachomorphus angustatus: Knight, 1974b: 491.

Geographic distribution (Map p. 202). North Island: AK–Te Atatu (NZAC). WN–Wellington (Knight, 1974b). South Island: CO, MB, MK, NN. Offshore Islands: KE, TH. Extralimital range: Australian Region (continental Australia, Fiji, Niue, Norfolk Island, Tonga), Oriental Region.

Biology. [Lowland, montane.] Collected on *Cassinia* [= *Ozothamnus*] (adults, nymphs), including *Cassinia leptophylla* and *C. vauvilliersii* [= *Ozothamnus leptophyllus*]; on *Cytisus*, *Erigeron*, grass (including tussock), low plants

and shrubs; also on *Ageratum*, *Carex*, and grasses (KE). [Hostplant: *Ozothamnus*.] Seasonality: October (KE), November, January–February, May. [Phloem-feeder.] Wing condition: Macropterous; forewings semi-coriaceous. Economic importance: Reported to be a vector of the phytoplasma diseases tomato big bud and potato purple top wilt.

References. Evans, 1966 (taxonomy; as *Batrachomorphus* [sic] *punctatus*). Metcalf, 1966a: 45 (catalogue, world; as *Iassus angustatus*). Eyles & Linnavuori, 1974 (biology, distribution, South Pacific, taxonomy). Knight, 1974b (biology, distribution, taxonomy), 1976b (biology, distribution). Wise, 1977: 79 (checklist, New Zealand). Knight, 1983 (biology, distribution, taxonomy). Day & Fletcher, 1994: 1186 (Australia, catalogue, economic importance).

Notes. According to Knight (1976b), this is possibly the unnamed species referred to by Myers (1921b) as occurring both on the Kermadecs and in New Zealand. The current distribution suggests that the species may be adventive on New Zealand's main islands, possibly originating from other areas of the Southwest Pacific.

Subfamily IDIOCERINAE

Reference. Webb, 1983 (Australia, revision).

Genus *Idiocerus* Lewis, 1834^A

Synonymy (see Metcalf, 1966b; Oman *et al.*, 1990).

Geographic distribution. Ethiopian Region, Holarctic Region; New Zealand (adventive).

References. Maldonado Capriles, 1964 (India, Philippines, taxonomy). Evans, 1966 (Australia, New Zealand, taxonomy). Metcalf, 1966b: 8–209 (catalogue, world). Knight, 1974b (New Zealand, taxonomy). Webb, 1976 (Ethiopian Region, taxonomy). Wise, 1977: 78 (checklist, New Zealand). Webb, 1983 (Australia, revision). Oman *et al.*, 1990: 219 (bibliography, checklist, genera, world).

Note. This genus has not been recorded from Australia.

***Idiocerus distinguendus* Kirschbaum, 1868^A**

Synonymy (see Metcalf, 1966b; Nast, 1972; Knight, 1974b).

Geographic distribution (Map p. 203). North Island: WI–Paiaka (NZAC). South Island: CO, MC, NC, OL, SC, SL, WD. First New Zealand record (Evans, 1963). Extralimital range: Palaearctic Region.

Biology. [Lowland, montane] Collected mostly on white poplar (*Populus alba*); also on *Populus nigra* 'Italica'. In France, recorded mainly on white poplar (*P. alba*), sometimes on black poplar (*P. nigra*). Seasonality: January–March. Phloem-feeder. Wing condition: Macropterous.

References. Ribaut, 1952 (biology, France). Evans, 1966 (taxonomy). Metcalf, 1966b: 42 (catalogue, world; as a synonym of *Idiocerus cognatus*). Dumbleton, 1967 (biology, distribution, identification). Knight, 1974b (biology, distribution, taxonomy). Wise, 1977: 79 (checklist, New Zealand).

Genus *Rhytidodus* Fieber, 1872^A

Synonymy (see Metcalf, 1966b; Oman *et al.*, 1990; Day & Fletcher, 1994).

Geographic distribution. Palaearctic Region, adventive elsewhere; Australian Region (continental Australia, New Zealand), Nearctic Region.

References. Metcalf, 1966b: 209–210 (catalogue, world). Knight, 1974b (New Zealand, taxonomy; as *Idiocerus*). Wise, 1977: 78 (checklist, New Zealand; as *Idiocerus*). Oman *et al.*, 1990: 248 (bibliography, checklist, genera, world). Day & Fletcher, 1994: 1165–1166 (Australia, catalogue).

Note. The authorship of this genus is discussed by Day & Fletcher (1994).

Rhytidodus decimaquartus (Schrank, 1776)^A

Synonymy (see Day & Fletcher, 1994).

Geographic distribution (Map p. 208). North Island: GB, HB, WA, WO. South Island: CO, MB, MC, NN, OL, SC, SL. First New Zealand records: MC, Christchurch and MB, Hanmer, 1964 (Dumbleton, 1967; as *Idiocerus decimusquartus* [*sic*]). Extralimital range: Australia? (New South Wales but see **Notes** below), Nearctic Region, Palaearctic Region.

Biology. [Lowland.] Collected mostly on *Populus nigra* or *P. nigra* 'Italica', sometimes also on *P. deltoides*. In France, recorded mainly on *Populus nigra*, sometimes on *Salix* or *Alnus*. In North America, recorded almost exclusively on *Populus nigra*, but sometimes *P. deltoides*. Seasonality: November–April. Phloem-feeder. Wings condition: Macropterous. Economic importance: Phytoplasma disease vector (Europe).

References. Ribaut, 1952 (biology, France). Freitag, 1965 (biology, North America). Metcalf, 1966b: 56–64 (catalogue, world; as *Idiocerus decimaquartus*). Dumbleton, 1967 (biology, distribution, identification; as *Idiocerus decimusquartus* [*sic*]). Knight, 1974b (biology, distribution, taxonomy; as *Idiocerus decimaquartus*). Wise, 1977: 78 (checklist, New Zealand; as *Idiocerus decimaquartus*). Day & Fletcher, 1994: 1166 (Australia, catalogue).

Notes. More information on hostplants and additional remarks on distribution and taxonomy are available in Day & Fletcher (1994) who also note that the record from Aus-

tralia is based on a single male specimen collected near a quarantine facility. They state that the species is probably not established in Australia.

Subfamily MACROPSINAE

References. Evans, 1966 (Australia, New Zealand, revision), 1971a (Australia, New Guinea, revision). Linnavuori, 1978 (Ethiopian Region, revision). Hamilton, 1980c (taxonomy, world; Macropsini).

Genus *Zelopsis* Evans, 1966^E

Zelopsis Evans, 1966: 168. Type species: *Zelopsis nothofagi* Evans, 1966, by monotypy.

Geographic distribution. New Zealand.

References. Knight, 1974b (taxonomy). Wise, 1977: 78 (checklist, New Zealand). Oman *et al.*, 1990: 261 (bibliography, checklist, genera, world).

Zelopsis nothofagi Evans, 1966^E

Type photograph p. 163.

Zelopsis nothofagi Evans, 1966: 168. Holotype female (NZAC); NN, Aniseed Valley.

Geographic distribution (Map p. 209). North Island: HB, ND–Ohuri (Knight, 1974b), RI, TK, TO, WN. South Island: BR, CO, FD, KA, MB, MC, MK, NC, NN, OL, SC, SL. Stewart Island.

Biology. Lowland to subalpine. Collected mostly on *Nothofagus solandri* (including *N. solandri cliffortioides*), but also on other *Nothofagus* species (e.g., *N. fusca*, *N. menziesii*); on low shrubs and other vegetation at the margins of *Nothofagus* forests; in leaf litter under fern in *Nothofagus* forest. [Hostplants: *Nothofagus solandri*, possibly other *Nothofagus* species.] Seasonality: November–March. [Phloem-feeder.] Wing condition: Submacropterous, nearly macropterous.

References. Knight, 1974b (biology, distribution, taxonomy). Wise, 1977: 78 (checklist, New Zealand).

Subfamily TARTESSINAE

Tribe THYMBRINI

References. Evans, 1937 (Australia, revision; as tribe of Ledorinae), 1969 (Australia, New Guinea, taxonomy; as tribe of Ledorinae). Knight, 1974a (New Zealand, revision; as tribe of Ledorinae).

Note. The tribe Thymbrini was transferred from the subfamily Ledorinae to the subfamily Tartessinae by Jones & Deitz (2009).

Genus *Novothymbris* Evans, 1941^E

Novothymbris Evans, 1941: 162. Type species: *Diedrocephala zealandica* Myers, 1923a, by original designation.

Geographic distribution. New Zealand.

References. Metcalf, 1962c: 124–126 (catalogue, world). Evans, 1966 (New Zealand, taxonomy). Knight, 1974a (revision). Wise, 1977: 77 (checklist, New Zealand). Oman *et al.*, 1990: 235 (bibliography, checklist, genera, world).

Notes. Knight (1974a) divided the genus into species groups on the basis of the male genitalia: *zealandica*-group (*zealandica*, *notata*, *punctata*, *tararua*); *cithara*-group (*cithara*, *notialis*, *peregrina*, *vagans*); *castor*-group (*castor*, *pollux*); other species (*cassiniae*, *hinemoa*, *eylesi*, *extremitatis*, *maorica*, *solitaria*). The genus is in need of more extensive collecting and ecological recording and of further taxonomic revision.

***Novothymbris cassiniae* (Myers, 1923)^E**

Type photograph p. 157.

Diedrocephala cassiniae Myers, 1923a: 408. Holotype male (NZAC ex BMNH); WN, Wellington.

Tylozygus cassiniae: Myers, 1927: 689.

Novothymbris cassiniae: Evans, 1941: 163.

Geographic distribution (Map p. 205). North Island: WN–Red Rocks (Knight, 1974a). Terawhiti (NZAC). Wellington (NZAC). South Island: MB–Black Birch Range (NZAC).

Biology. [Lowland to subalpine.] Collected in numbers on *Ozothamnus leptophyllus* and *Olearia solandri*. Seasonality: October–November, January–February, April, June. [Phloem-feeder.] Wing condition: Submacropterous; forewings coriaceous.

References. Myers, 1923a (biology). Metcalf, 1962c: 124 (catalogue, world). Evans, 1966 (taxonomy). Knight, 1974a (biology, distribution, taxonomy). Wise, 1977: 77 (checklist, New Zealand).

***Novothymbris castor* Knight, 1974^E**

Type photograph p. 157.

Novothymbris castor Knight, 1974a: 464. Holotype male (NZAC); DN, Lake Mahinerangi.

Geographic distribution (Map p. 206). South Island: DN, MC, MK, NC.

Biology. [Lowland to subalpine.] Collected on *Coprosma* (including *C. parviflora*), *Hebe* (including *H. salicifolia*, *H. odora*), *Hoheria glabrata*, *Brachyglottis cassinioides*, *Muehlenbeckia*, *Nothofagus*; also on shrubs at the margin of *Nothofagus* forests, and on various other shrubs and grasses (including tussock). Seasonality: November, January–February. [Phloem-feeder.] Wing condition: Submacropterous; forewings coriaceous.

References. Knight, 1974a (biology, distribution, taxonomy). Evans, 1977 (checklist). Wise, 1977: 77 (checklist, New Zealand).

Note. This taxon could be conspecific with *N. pollux*.

***Novothymbris cithara* Knight, 1974^E**

Novothymbris cithara Knight, 1974a: 460. Holotype male (NZAC ex LUNZ); BR, Westport, Island Creek area.

Geographic distribution (Map p. 206). North Island: TO–Ohakune (Knight, 1974a). South Island: BR–Westport, Island Creek area (NZAC). NN–Takaka Hill (Knight, 1974a). Waimangaroa (Knight, 1974a).

Biology. [Lowland, montane.] Collected on *Weinmannia racemosa*. Seasonality: October–December. [Phloem-feeder.] Wing condition: Submacropterous; forewings coriaceous.

References. Knight, 1974a (biology, distribution, taxonomy). Evans, 1977 (checklist). Wise, 1977: 77 (checklist, New Zealand).

***Novothymbris extremitatis* Knight, 1974^E**

Type photograph p. 158.

Novothymbris extremitatis Knight, 1974a: 470. Holotype male (NZAC); ND, Spirits Bay, Unuwhao.

Geographic distribution (Map p. 206). North Island: ND–Spirits Bay, Unuwhao.

Biology. [Lowland.] Habitat: Unknown. Seasonality: January. Wing condition: Submacropterous; forewings coriaceous.

References. Knight, 1974a (biology, distribution, taxonomy). Evans, 1977 (checklist). Wise, 1977: 77 (checklist, New Zealand).

Note. This taxon is closely related to *N. maorica* (Knight, 1974a).

***Novothymbris eylesi* Knight, 1974^E**

Type photograph p. 158.

Novothymbris eylesi Knight, 1974a: 468. Holotype male (NZAC); KA, Seaward Kaikoura Range, Mount Snowflake.

Geographic distribution (Map p. 206). South Island: KA–Seaward Kaikoura Range, Mount Snowflake.

Biology. [Montane.] Collected on *Ozothamnus leptophyllus* (adults, nymphs), its probable hostplant. Seasonality: October. [Phloem-feeder.] Wing condition: Submacropterous; forewings coriaceous.

References. Knight, 1974a (biology, distribution, taxonomy). Evans, 1977 (checklist). Wise, 1977: 77 (checklist, New Zealand).

Note. This taxon is most closely related to *N. hinemoa* (Knight, 1974a).

***Novothymbris hinemoa* (Myers, 1923)^E**

Diedrocephala hinemoa Myers, 1923a: 412. Holotype* male (BMNH, could not be located); NN, Nelson.

Diedrocephala dunensis Myers, 1923a: 411. Holotype female (NZAC ex BMNH); NN, Dun Mountain. Synonymised by Knight, 1974a: 468.

Tylozygus dunensis: Myers, 1927: 689.

Tylozygus hinemoa: Myers, 1927: 689.

Novothymbris dunensis: Evans, 1941: 163.

Novothymbris hinemoa: Evans, 1941: 163.

Geographic distribution (Map p. 206). South Island: BR–Mount Misery (NZAC). NN–Aniseed Valley (Knight, 1974a). Dun Mountain (NZAC). Mount Arthur, tableland (Knight, 1974a). Mount Peel (Knight, 1974a). Nelson (Knight, 1974a). Takaka Hill (Knight, 1974a). Whangamoa Saddle (NZAC). SD–D’Urville Island (NZAC). Stephens Island (NZAC).

Biology. Lowland to subalpine. Collected on *Hebe stricta*, its hostplant. Seasonality: October–November, December–January (mostly), February–March. [Phloem-feeder.] Wing condition: Submacropterous; forewings coriaceous.

References. Metcalf, 1962c: 125 (catalogue, world). Knight, 1974a (biology, distribution, taxonomy). Evans, 1966 (taxonomy; as *Novothymbris dunensis* and *N. hinemoa*), 1977 (notes). Wise, 1977: 77 (checklist, New Zealand).

Note. This taxon is most closely related to *N. eylesi* (Knight, 1974a).

***Novothymbris maorica* (Myers, 1923)^E**

Diedrocephala maorica Myers, 1923a: 409. Holotype* male (BMNH, could not be located); WN, Wainuiomata.

Diedrocephala hudsonica Myers, 1923a: 414. Holotype female (NZAC ex BMNH); WN, Karori. Synonymised by Knight, 1974a: 470.

Tylozygus maorica: Myers, 1927: 689.

Tylozygus hudsonica: Myers, 1927: 689.

Novothymbris maorica: Evans, 1941: 163.

Novothymbris hudsonica: Evans, 1941: 163.

Geographic distribution (Map p. 206). North Island: WN–Karori (NZAC). Wainuiomata (Knight, 1974a).

Biology. [Lowland.] Habitat: Unknown. Seasonality: February. [Phloem-feeder.] Wing condition: Submacropterous, nearly macropterous; forewings coriaceous.

References. Metcalf, 1962c: 125 (catalogue, world). Knight, 1974a (biology, distribution, taxonomy). Evans, 1966 (taxonomy; as *Novothymbris hudsonica* and *N. maorica*), 1977 (notes). Wise, 1977: 77 (checklist, New Zealand).

Note. This taxon is closely related to *N. extremitatis* (Knight, 1974a).

***Novothymbris notata* Knight, 1974^E**

Type photograph p. 158.

Novothymbris notata Knight, 1974a: 457. Holotype male (NZAC ex BMNH); ND, Whangarei.

Geographic distribution (Map p. 206). North Island: AK, BP, CL, ND. Offshore Islands: TH.

Biology. Lowland. Collected mostly on *Leptospermum scoparium* and *Kunzea ericoides*, both potential hostplants; also on sedges in swampy lowlands. Seasonality: November–December, January (mostly), February–April. [Phloem-feeder.] Wing condition: Macropterous; forewings coriaceous.

References. Knight, 1974a (biology, distribution, taxonomy). Evans, 1977 (checklist). Wise, 1977: 77 (checklist, New Zealand).

Note. This taxon could be conspecific with *N. zealandica*.

***Novothymbris notialis* Knight, 1974^E**

Type photograph p. 159.

Novothymbris notialis Knight, 1974a: 463. Holotype male (NZAC); Stewart Island, Mount Rakeahua.

Geographic distribution (Map p. 206). South Island: FD, SL. Stewart Island.

Biology. [Lowland to subalpine.] Collected on *Coprosma* (several adults and nymphs); *Cassinia* [= *Ozothamnus*?] and *Dracophyllum* among tussock (one adult, several nymphs); also on *Olearia virgata*. [Hostplant: *Coprosma*.] Seasonality: December–February. [Phloem-feeder.] Wing condition: Submacropterous, nearly brachypterous; forewings coriaceous.

References. Knight, 1974a (biology, distribution, taxonomy). Evans, 1977 (checklist). Wise, 1977: 77 (checklist, New Zealand).

Note. This taxon is closely related to *N. vagans* (Knight, 1974a).

***Novothymbris peregrina* Knight, 1974^E**

Type photograph p. 159.

Novothymbris peregrina Knight, 1974a: 462. Holotype male (NZAC); FD, Eglinton Valley.

Geographic distribution (Map p. 206). South Island: BR–Lake Rotoroa (Knight, 1974a). FD–Eglinton Valley (NZAC).

Biology. [Lowland.] Habitat: Unknown. Seasonality: January–February. [Phloem-feeder.] Wing condition: Submacropterous, nearly brachypterous; forewings coriaceous.

References. Knight, 1974a (biology, distribution, taxonomy). Evans, 1977 (checklist). Wise, 1977: 77 (checklist, New Zealand).

Note. This taxon could be conspecific with *N. vagans*.

***Novothybris pollux* Knight, 1974^E**

Type photograph p. 159.

Novothybris pollux Knight, 1974a: 466. Holotype male (NZAC); MC, [Christchurch] McLennans Bush.

Geographic distribution (Map p. 207). South Island: MC–McLennans Bush.

Biology. Altitudinal range and habitat: Unknown. Seasonality: December. [Phloem-feeder.] Wing condition: Submacropterous, nearly brachypterous; forewings coriaceous.

References. Knight, 1974a (biology, distribution, taxonomy). Evans, 1977 (checklist). Wise, 1977: 77 (checklist, New Zealand).

Note. This taxon could be conspecific with *N. castor*.

***Novothybris punctata* Knight, 1974^E**

Type photograph p. 159.

Novothybris punctata Knight, 1974a: 458. Holotype male (NZAC); WN, Wellington.

Geographic distribution (Map p. 207). North Island: WN–Wellington (NZAC). York Bay (Knight, 1974a).

Biology. [Lowland.] Habitat: Unknown. Seasonality: November–January. [Phloem-feeder.] Wing condition: Submacropterous; forewings coriaceous.

References. Knight, 1974a (biology, distribution, taxonomy). Evans, 1977 (checklist). Wise, 1977: 78 (checklist, New Zealand).

***Novothybris solitaria* Knight, 1974^E**

Type photograph p. 160.

Novothybris solitaria Knight, 1974a: 471. Holotype male (NZAC); CH, Chatham Island, Awatotara, forest [=Awatotara Forest].

Geographic distribution (Map p. 207). Offshore Islands: CH, Chatham Island, Awatotara Forest.

Biology. Lowland. Collected on *Olearia* (adults, nymphs), *Dracophyllum* and *Cyathodes* [=*Leucopogon* or *Leptecophylla*] in bog, in forest leaf litter, and in swamp forest. [Hostplant: *Olearia*.] Seasonality: January–March. [Phloem-feeder.] Wing condition: Macropterous; forewings coriaceous.

References. Knight, 1974a (biology, distribution, taxonomy). Knight, 1976b (biology, distribution). Evans, 1977 (checklist). Wise, 1977: 78 (checklist, New Zealand).

***Novothybris tararua* (Myers, 1923)^E**

Type photograph p. 160.

Diedrocephala tararua Myers, 1923a: 410. Holotype female (NZAC ex BMNH); WN, Tararua Range, Mount Alpha.

Tylozygus tararua: Myers, 1927: 689.

Novothybris tararua: Evans, 1941: 163.

Novothybris tararua [sic]: Evans, 1966: 131.

Geographic distribution (Map p. 207). North Island: WN–Tararua Range (Mount Alpha (NZAC); Bull Mound (Knight, 1974a)). South Island: SD–Stephens Island (NZAC).

Biology. [Lowland, montane.] Habitat: Unknown. Seasonality: January–February. [Phloem-feeder.] Wing condition: Macropterous; forewings coriaceous.

References. Metcalf, 1962c: 125 (catalogue, world). Knight, 1974a (biology, distribution, taxonomy). Evans, 1966 (taxonomy; as *Novothybris tararua* [sic]), 1977 (checklist). Wise, 1977: 78 (checklist, New Zealand).

***Novothybris vagans* Knight, 1974^E**

Type photograph p. 160.

Novothybris vagans Knight, 1974a: 462. Holotype male (NZAC); FD, Hunter Mountains, Monowai, road to Mount Burns.

Geographic distribution (Map p. 207). South Island: BR–Arorangi Reserve, Greymouth (Knight, 1974a). Mount Misery (NZAC). FD–Clinton River (NZAC). Hunter Mountains, Monowai, road to Mount Burns (NZAC). Simonin Creek, Upper Pyke River (NZAC). Turret Range, Wolfe Flat (NZAC). Wilmot Pass (NZAC).

Biology. [Lowland to subalpine.] Collected on *Coprosma* (adults, nymphs), *Nothofagus* (adults, nymphs), and *Hebe* (adults). Seasonality: December–February. [Phloem-feeder.] Wing condition: Macropterous; forewings coriaceous.

References. Knight, 1974a (biology, distribution, taxonomy). Evans, 1977 (checklist). Wise, 1977: 78 (checklist, New Zealand).

Notes. This taxon is closely related to *N. notialis* (Knight, 1974a). It could be conspecific with *N. peregrina*.

***Novothybris zealandica* (Myers, 1923)^E**

Type photograph p. 160.

Diedrocephala zealandica Myers, 1923a: 409. Holotype male (NZAC ex BMNH); NN, Dun Mountain.

Tylozygus zealandica: Myers, 1927: 689.

Novothybris zealandica: Evans, 1941: 163.

Geographic distribution (Map p. 207). North Island: AK, CL, ND, TK, TO, WN. South Island: BR, FD, NC, NN, OL, WD. Stewart Island.

Biology. [Lowland, montane.] Collected on *Coprosma-Meliccytus* association, *Corokia*, *Kunzea ericoides*, *Nothofagus menziesii*, *Olearia lacunosa*, *Podocarpus*, dead *Rhopalostylis sapida* trunk; also in *Agathis australis* forest gully. Seasonality: October–April. [Phloem-feeder.] Wing condition: Macropterous; forewings coriaceous.

References. Metcalf, 1962c: 126 (catalogue, world). Evans, 1966 (taxonomy). Knight, 1974a (biology, distribution, taxonomy). Wise, 1977: 78 (checklist, New Zealand).

Note. This taxon could be conspecific with *N. notata*.

Subfamily TYPHLOCYBINAЕ

References. Matsumura, 1931 (genera, Oriental Region, Palaearctic Region, revision). Young, 1952 (classification, Western Hemisphere). Dlabola, 1958 (classification, Palaearctic Region). Dumbleton, 1964 (distribution, identification, New Zealand). Evans, 1966 (Australia, New Zealand, taxonomy). Mahmood, 1967 (genera, Oriental Region, revision). Sohi & Dworakowska, 1984 (India, revision). Fletcher & Donaldson, 1992 (Australia, biology, taxonomy). Dietrich & Dmitriev, 2006 (Erythroneurini, genera, New World, review).

Tribe EMPOASCINI

Genus *Kybos* Fieber, 1866^A

Synonymy (see Metcalf, 1968; Oman *et al.*, 1990).

Geographic distribution. Holarctic Region; Australian Region (Australia - New South Wales), New Zealand; adventive).

References. DeLong, 1931 (Nearctic, revision; as *Empoasca* (*Kybos*)). Lower, 1952 (Australia, revision; as genus). Metcalf, 1968: 364–425 (catalogue, world; as *Empoasca* (*Kybos*)). Dworakowska, 1976 (taxonomy; as *Empoasca* (*Kybos*)). Wise, 1977: 81 (checklist, New Zealand; as genus). Oman *et al.*, 1990: 209 (bibliography, checklist, genera, world; as *Empoasca* (*Kybos*)). Mühlethaler *et al.*, 2009 (Central Europe, revision; as genus).

Note. This taxon was first recorded in Australia by Fletcher & Knight (1998).

Kybos lindbergi (Linnavuori, 1951)^A

Synonymy (see Nast, 1972).

Geographic distribution (Map p. 203). South Island: MC–Ashburton (NZAC). Christchurch (Dean's Avenue Nursery; Riccarton) (Knight, 1976a; as *Kybos betulicola*). First New Zealand record: Riccarton, MC, 1961 (Dumbleton, 1964; misidentified as *Kybos betulicola* (Wagner, 1955)). Extralimital range: Australia (New South Wales), Palaearctic Region.

Biology. Lowland. Collected on *Betula alba*, *Betula* sp. (Knight, 1976a; as *Kybos betulicola*). Hostplant: *Betula*. Seasonality: December–January. Parenchyma-feeder. Wing condition: Macropterous.

References. Metcalf, 1968: 334 (catalogue, world; as *Empoasca* (*E.*) *lindbergi*). Knight, 1976a (biology, distribution, taxonomy; as *Kybos betulicola*). Wise, 1977: 81 (checklist, New Zealand; as *Kybos betulicola*). Fletcher & Knight, 1998 (Australia, biology; as *Empoasca* (*Kybos*) *lindbergi*). Mühlethaler *et al.*, 2009 (Central Europe, taxonomy).

Note. Most specimens listed by Knight (1976b) as having been deposited in the DSIR [=NZAC] collection, could not be located.

Kybos smaragdula (Fallén, 1806)^A

Synonymy (see Metcalf, 1968; Knight, 1976a).

Geographic distribution (Map p. 203). South Island: MC–Christchurch (NZAC), Botanical Gardens (Knight, 1976a). First New Zealand record: MC, Christchurch, 1964 (NZAC; Dumbleton, 1964). Extralimital range: Nearctic Region, Palaearctic Region.

Biology. Lowland. Collected on *Alnus* (adults, one nymph). Seasonality: December–January. [Parenchyma-feeder.] Wing condition: Macropterous.

References. Evans, 1966 (Australia, New Zealand, taxonomy; as *Empoasca* (*Kybos*) *smaragdula*). Metcalf, 1968: 403–418 (catalogue, world; as *Empoasca* (*Kybos*) *smaragdula*). Knight, 1976a (biology, distribution, taxonomy; as *Empoasca* (*Kybos*) *smaragdula*). Wise, 1977: 81 (checklist, New Zealand; as *Empoasca* (*Kybos*) *smaragdula*). Mühlethaler *et al.*, 2009 (Central Europe, taxonomy).

Genus *Matatua* Knight, 1976^E

Matatua Knight, 1976a: 85. Type species: *Matatua montivaga* Knight, 1976a, by original designation.

Geographic distribution. New Zealand.

References. Knight, 1976a (revision). Wise, 1977: 81–82 (checklist, New Zealand). Oman *et al.*, 1990: 228 (bibliography, checklist, genera, world).

Matatua maorica (Myers, 1923)^E

Type photograph p. 155.

Dikraneura maorica Myers, 1923a: 423. Lectotype female (designated by Knight, 1976a; NZAC ex BMNH); WI [Wanganui], Longacre.

Matatua maorica: Knight, 1976a: 86.

Geographic distribution (Map p. 204). North Island: WI–Longacre.

Biology. [Lowland.] Habitat: Unknown. Seasonality: December. [Parenchyma-feeder.] Wing condition: Macropterous.

References. Metcalf, 1968: 147 (catalogue, world; as *Dikraneura maorica*). Knight, 1976a (biology, distribution, taxonomy). Wise, 1977: 82 (checklist, New Zealand).

Note. This taxon could be conspecific with *M. montivaga*.

Matatua montivaga Knight, 1976^E

Type photograph p. 155.

Matatua montivaga Knight, 1976a: 85. Holotype male (NZAC); MK, Mount Cook National Park, Mount Sebastopol, Red Lakes [=Tarns].

Geographic distribution (Map p. 205). South Island: MK–Mount Cook National Park (Governors Bush (Knight, 1976a); Hooker Valley, 1.6 and 3.2 km N of Hermitage (Knight, 1976a); Mount Sebastopol, Red Lakes [=Tams] (NZAC); 0.8 km S of Kea Point (Knight, 1976a)). OL–Mount Aspiring National Park, Makarora (NZAC).

Biology. Montane. Collected in large numbers on *Coprosma parviflora* and *Polystichum vestitum*; also collected on grass, low plants and shrubs; low shrubs at margin of *Nothofagus* forest; *Nothofagus-Podocarpus* association; shrubs and tussock grass; understorey vegetation in *Nothofagus* forest. [Hostplant: *Coprosma parviflora*.] Seasonality: January–February (mostly). [Parenchyma-feeder.] Wing condition: Macropterous.

References. Knight, 1976a (biology, distribution, taxonomy). Wise, 1977: 82 (checklist, New Zealand).

Notes. Knight (1976a) remarked that “females of the genus, possibly belonging to this species, have been examined from Spirit’s Bay and Te Pahi [ND], Wainuiomata in Wellington [WN], the West Arm of L. [=Lake] Manapouri [FD] in Otago Province, and Nelson [NN].” See also **Note** under *M. maorica*.

Tribe ERYTHRONEURINI

Genus *Anzygina* Fletcher & Larivière, 2009^N

Anzygina Fletcher & Larivière, 2009: 165. Type species: *Erythroneura sidnica* Kirkaldy, 1906, by original designation.

Geographic distribution. New Zealand, Australia (continental, Tasmania), Lord Howe Island, Norfolk Island, Papua New Guinea.

Reference. Fletcher & Larivière, 2009 (taxonomy, key to species).

Anzygina agni (Knight, 1976)^A

Type photograph p. 151.

Zygina agni Knight, 1976a: 77. Holotype male (NZAC, missing except for male genitalia); AK, Auckland, Greenlane. *Anzygina agni*: Fletcher & Larivière, 2009: 168.

Geographic distribution (Map p. 201). North Island: AK–Auckland, Greenlane. Extralimital range: Australia (New South Wales, South Australia).

Biology. [Lowland.] Collected on *Geranium* (Australia). Seasonality: November (Australia), January (AK). [Parenchyma-feeder.] Wing condition: Macropterous.

References. Knight, 1976a (biology, distribution, taxonomy). Wise, 1977: 81 (checklist, New Zealand). Fletcher & Larivière, 2009 (taxonomy, genitalia figures).

Notes. Knight (1976a) suggested that the species was endemic to New Zealand but Fletcher & Larivière (2009)

proposed that the species was adventive in New Zealand. Its biostatus in Australia is also unclear as it has only been collected from exotic *Geranium*.

Anzygina barrattae Fletcher & Larivière, 2009^E

Type photograph p. 151.

Anzygina barrattae Fletcher & Larivière, 2009: 174. Holotype male (NZAC), SL, Ajax Swamp.

Geographic distribution (Map p. 201). South Island: SL–Ajax Swamp.

Biology. [Lowland.] Hostplants: unknown. Seasonality: January–February. [Parenchyma-feeder.] Wing condition: Macropterous.

Reference. Fletcher & Larivière, 2009: (taxonomy, genitalia figures).

Note. This species forms an endemic species group with *A. ramsayi* and *A. toetoe*.

Anzygina dumbletoni (Ghuri, 1963)^{A?}

Zygina dumbletoni Ghauri, 1963: 39. Holotype male (BMNH); MC, [Christchurch] Riccarton.

Anzygina dumbletoni: Fletcher & Larivière, 2009: 170.

Common name: Dumbleton’s Leafhopper.

Geographic distribution (Map p. 201). North Island: AK–Auckland (Henderson; Mount Albert) (NZAC). CL–Coroglen (NZAC). GB–Wairoa. (Knight, 1976a). HB–Hastings (Dumbleton, 1964). South Island: MC–Christchurch, Riccarton (Knight, 1976a). Selwyn River (Knight, 1976a). Springston (Knight, 1976a). NN–Nelson (NZAC; Knight, 1976a), Botanical Hill (Knight, 1976a).

Biology. [Lowland.] Collected on *Acaena novae-zelandiae* (NN), blackberry (*Rubus fruticosus* (AK, CL, HB, MC), *Dactylis glomerata* (NN), raspberry (*Rubus idaeus*) (AK, MC); bred on blackberry (MC). Described from raspberry and blackberry growing at Riccarton [MC]; Dumbleton (1964) recorded it again from raspberry at Riccarton, from strawberry (*Fragaria x ananassa*) at Hastings and blackberry at Springston. Seasonality: November, January, March–May, August. [Parenchyma-feeder.] Wing condition: Macropterous. Economic importance: Has been found on cane fruit and strawberries.

References. Dumbleton, 1964 (biology, distribution). Evans, 1966 (key, taxonomy). Knight, 1976a (biology, distribution, key, taxonomy). Wise, 1977: 81 (checklist, New Zealand). Fletcher & Larivière, 2009 (taxonomy, genitalia figures). Charles, 2004 (economic importance).

Notes. The specimens supporting the locality records given by Knight (1976a), and listed as having been deposited in the DSIR [=NZAC] collection, could not be located. The earliest NZAC record at hand is of a collection from Nelson in 1944. Dumbleton (1964) stated that the species was

introduced to New Zealand based on its association with deciduous food plants, its winter diapause and the form of the aedeagus. Knight (1976a) suggested that it was endemic. Fletcher & Larivière (2009) supported the extralimital origin of the species but, as with Dumbleton (1964), reported no records from outside New Zealand. Knight (1976a) illustrated what he believed to be an aberrant form of this species from New Zealand but did not list collection details of any material. Additional material of this form from several localities in Queensland indicated that the form was a separate Australian species and was described as *Anzygina billi* by Fletcher & Larivière (2009). No specimens of *A. billi* are currently known from New Zealand.

Anzygina ramsayi (Knight, 1976)^E

Type photograph p. 151.

Zygina ramsayi Knight, 1976a: 75. Holotype male (NZAC); RI, Ruahine Range.

Anzygina ramsayi: Fletcher & Larivière, 2009: 173.

Geographic distribution (Map p. 201). North Island: RI–Ruahine Range (NZAC). South Island: BR–Lewis Pass (NZAC).

Biology. [Lowland, montane.] Collected on *Dracophyllum* (RI). Seasonality: January–February. [Parenchyma-feeder.] Wing condition: Macropterous.

References. Knight, 1976a (biology, distribution, taxonomy). Wise, 1977: 81 (checklist, New Zealand). Fletcher & Larivière, 2009 (taxonomy, genitalia figures).

Notes. The type locality indicated on the holotype label is Ruahine Range, Hawkes Bay. This suggests that the type series was collected on the eastern side, the Hawkes Bay side, of the Ruahines and consequently in the Rangitikei (RI) area code for the purpose of this catalogue. *Anzygina ramsayi* is here recorded from the South Island for the first time, but it is likely that this is in fact a South Island species which extends its range North across the Cook Strait in the greater Wellington–Wairarapa–Hawkes Bay region of the southern North Island. Such a distribution pattern is not uncommon among New Zealand insects. The distribution of *A. ramsayi* also suggests that the species is more widely distributed on both the North and South Island than is currently recognised; more collecting and a better understanding of habitat preferences is needed in order to verify this. As noted by Fletcher & Larivière (2009) this species with *A. toetoe* and *A. barrattae* are endemics with similar aedeagal structure and may represent a separate endemic genus.

Anzygina toetoe (Cumber, 1952)^E

Type photograph p. 151.

Erythroneura toetoe Cumber, 1952a: 525. Holotype male (MONZ); WI, Paiaka.

Zygina toetoe: Knight, 1976a: 75.

Anzygina toetoe: Fletcher & Larivière, 2009: 174.

Geographic distribution (Map p. 201). North Island: BP–Rotorua, Mamaku Plateau (27 km West) (NZAC). RI–Ruahine Range, Triplex Creek (NZAC). WI–Paiaka (MONZ).

Biology. [Lowland.] Collected on toetoe (*Cortaderia fulvida*) in swamp area (adults, nymphs), its hostplant; also on undergrowth vegetation, e.g., *Blechnum*, in *Nothofagus* forest. Seasonality: October–February. [Parenchyma-feeder.] Wing condition: Macropterous.

References. Metcalf, 1968: 1105–1106 (catalogue, world; as *Erythroneura toetoe*). Knight, 1976a (biology, distribution, taxonomy). Wise, 1977: 81 (checklist, New Zealand).

Notes. This species is unusual in that the tegmen is obliquely truncate apically, whereas all other species have the tegmen apically rounded. Its association with native species of *Cortaderia* was reported by Fletcher & Larivière (2009). This species forms an endemic species group with *A. ramsayi* and *A. barrattae*.

Anzygina zealandica (Myers, 1923)^N

Type photograph p. 152.

Erythroneura zealandica Myers, 1923a: 424. Holotype male (NZAC ex BMNH); Wellington [=WN], Tararua Range.

Erythroneura kiekie Myers, 1923a: 426. Holotype male (BMNH); [WN] York Bay. Synonymised by Knight, 1976a: 73.

Erythroneura cyathea Myers, 1923a: 426. Lectotype male (designated by Knight, 1976a; NZAC ex BMNH); [WN] York Bay. Synonymised by Knight, 1976a: 73.

Erythroneura ansonae Myers, 1923a: 427. Holotype female (BMNH); [WN] Wellington, Karori. Synonymised by Knight, 1976a: 73.

Erythroneura ix Myers, 1928a: 312. Holotype male (BMNH); Australia, Victoria, Melbourne. Synonymised by Knight, 1976a: 73.

Zygina zealandica: Knight, 1976a: 73.

Anzygina zealandica: Fletcher & Larivière, 2009: 173.

Common name: Grass Leafhopper.

Geographic distribution (Map p. 201). North Island: AK, BP, CL, GB, HB, ND, RI, TO, WA, WI, WN, WO. South Island: BR, CO, FD, KA, MC, MK, NN, OL, SC, SD, SL, WD. Offshore Islands: CH, TH. Extralimital distribution: Australia (all states and territories, except Northern Territory), Lord Howe Island.

Biology. [Lowland to subalpine.] Collected on an extremely wide variety of native and introduced shrubs and low plants (including grasses, broom, sedge, clovers, pastoral vegetation in general), in unmodified or modified, forested or open environments. Nymphs and adults have been collected together on *Acaena novae-zealandiae*, mixed grass (e.g., roadside grass), mixed rainforest undergrowth and

Ozothamnus, which may indicate hostplant associations. Large numbers of adults have been recorded on *Hieracium*, *Brachyglottis cassinioides*, *Trifolium pratense* and *Urtica ferox*. The species has been reported on *Solanum tuberosum*. In Australia, it has also been recorded on a wide range of plants, including *Medicago sativa* crops, *Oxalis debilis*, *Stellaris media* and all kinds of garden plants and vegetables. Seasonality: November–June. [Parenchyma-feeder.] Wing condition: Macropterous. Economic importance: Grass species which occasionally moves into commercial orchards.

References. Ghauri, 1963 (taxonomy; as *Zygina zealandica*). Evans, 1966 (key, taxonomy; as *Z. ansonae*, *Z. cyathea*, *Z. kiekie*, *Z. cyathea*, *Z. zealandica*). Metcalf, 1968: 1438 (catalogue, world; as *Zygina zealandica*). Knight, 1976a (biology, distribution, taxonomy; as *Zygina zealandica*). Wise, 1977: 81 (checklist, New Zealand; as *Zygina zealandica*). Day & Fletcher, 1994: 1232 (Australia, catalogue; as *Zygina zealandica*). Syrett & Smith, 1998 (biology; as *Zygina zealandica*). Charles, 2004 (economic importance; as *Zygina zealandica*). Fletcher & Larivière, 2009 (taxonomy, genitalia figures).

Notes. This is a common and widespread species in both New Zealand and Australia. It exists in a number of colour forms which were separated as distinct species by Myers (1923a). The status of these various colour forms needs to be examined in detail with their distributions.

Genus *Zygina* Fieber, 1866

(See Genus *Anzygina* Fletcher & Larivière, 2009)

Note. New Zealand species listed by previous authors under *Zygina* are now placed in the genus *Anzygina* Fletcher & Larivière, 2009.

Tribe TYPHLOCYBINI

Genus *Edwardsiana* Zachvatkin, 1929^A

Synonymy (see Metcalf, 1968; Oman *et al.*, 1990; Day & Fletcher, 1994).

Geographic distribution. Nearctic Region, Palaearctic Region; adventive in Australia (continental, Tasmania) and New Zealand.

References. Evans, 1966 (Australia, key, New Zealand, taxonomy; as *Typhlocyba*). Metcalf, 1968: 966–1044 (catalogue, world). Knight, 1976a (New Zealand, taxonomy; as *Typhlocyba*). Wise, 1977 (checklist, New Zealand; as *Typhlocyba*). Oman *et al.*, 1990: 208 (bibliography, checklist, genera, world). Day & Fletcher, 1994: 1229 (Australia, catalogue).

Notes. Contrary to the information published by Charles

(1989), *Edwardsiana crataegi* (Douglas, 1876) is not recognised as a senior synonym of *E. froggatti*. In addition, the authors could not find any evidence of the occurrence of *E. crataegi* in New Zealand (see also **Appendix D**).

Edwardsiana froggatti (Baker, 1925)^A

Synonymy (see Metcalf, 1968; Day & Fletcher, 1994).

Common names: Froggatt's Apple Leafhopper (New Zealand), Apple Leafhopper (mainland Australia), Canary Fly (Tasmania).

Geographic distribution (Map p. 208). North Island: AK, HB, WA, WI. South Island: MB, MC, NN. First New Zealand record: unknown locality, about 1918 (Dumbleton, 1934) Extralimital range: Australia (New South Wales, Tasmania), Nearctic Region, Palaearctic Region.

Biology. Lowland. Occurs predominantly on apple (*Malus spp.*), its hostplant; also found on *Crataegus* and *Rubus idaeus*. Seasonality: November–May (adults). Parenchyma-feeder. Wing condition: Macropterous. Economic importance: Pest in commercial apple orchards.

References. Dumbleton, 1934, 1937 (biology, control, economic importance, New Zealand). Evans, 1935 (biology, Tasmania). Cottier, 1956 (biology, New Zealand). Evans, 1966 (Australia, New Zealand, taxonomy; as *Typhlocyba froggatti*). Metcalf, 1968: 969–974 (catalogue, world; under *Typhlocyba australis*). Collyer & van Geldermalsen, 1975 (economic importance, New Zealand). Knight, 1976a (New Zealand, taxonomy; as *Typhlocyba froggatti*). Wise, 1977: 81 (checklist, New Zealand; as *Typhlocyba froggatti*). Teulon & Penman, 1984, 1986a–b, 1987 (biology, economic importance, New Zealand; as *Typhlocyba froggatti*). Charles, 1989 (biology, economic importance, New Zealand; as *E. crataegi*). Day & Fletcher, 1994: 1229 (Australia, catalogue). Charles, 2004 (economic importance).

Notes. *Edwardsiana crataegi* does not occur in New Zealand (see also **Appendix D**). New Zealand observations published by Charles (1989) for *E. crataegi* – thinking it to be a senior synonym of *E. froggatti* – could probably be inferred to *E. froggatti* directly, but information gathered by Charles on the biology and control of *E. crataegi* outside New Zealand may not necessarily apply to New Zealand populations of *E. froggatti*. More detailed information on biology and economic importance can be found in Teulon & Penman (1984–1987) and Charles (1989, 2004).

Edwardsiana lethierryi (Edwards, 1881)^A

Synonymy (see Metcalf, 1968; Knight, 1976a).

Geographic distribution (Map p. 203). North Island: HB–Napier, Bluff Hill (NZAC). South Island: MC–Christchurch region (Knight, 1976a). First New Zealand record: Riccarton, MC, 1957 Dumbleton (1964).

Extralimital range: Nearctic Region, Palaearctic Region.

Biology. [Lowland.] Collected on *Aesculus hippocastanum* (as *A. hippococ*) in botanical gardens, *Betula alba* in nursery, *Citrus aurantifolia* and *Rubus idaeus* in the Christchurch region. Seasonality: December–February. [Parenchyma-feeder.] Wing condition: Macropterous.

References. Dumbleton, 1964 (biology, distribution). Evans, 1966 (Australia, New Zealand, taxonomy; as *Typhlocyba lethierryi*). Metcalf, 1968: 1004–1010 (catalogue, world). Knight, 1976a (New Zealand, taxonomy). Wise, 1977: 81 (checklist, New Zealand; as *Typhlocyba lethierryi*).

Note. The authors could not locate any of the specimens from the Christchurch region listed by Knight (1976a) as deposited in the DSIR (=NZAC) collection, although this does not put the occurrence of the species in that region into question.

Genus *Eupteryx* Curtis, 1833^A

Synonymy (see Metcalf, 1968; Nast, 1972).

Geographic distribution. Oriental Region, Palaearctic Region; New Zealand (adventive).

References. Metcalf, 1968: 1494–1502 (catalogue, world). Knight, 1976a (New Zealand, taxonomy). Oman *et al.*, 1990: 211 (bibliography, checklist, genera, world).

Note. This taxon was not listed for Australia by Day & Fletcher (1994).

Eupteryx melissae Curtis, 1837^A

Synonymy (see Metcalf, 1968; Knight, 1976a).

Common name: Herb Leafhopper.

Geographic distribution (Map p. 203). North Island: AK–Auckland (Mt Albert (NZAC); Oratia (NZAC); Parnell (NZAC); Titirangi (NZAC)). HB–Napier (NZAC). South Island: MC–Christchurch (Knight, 1976a). Lincoln (NZAC). NN–Nelson (Atawhai Crescent (NZAC); Riwaka Research Station (NZAC)). Offshore Islands: CH–Chatham Island, Waitangi (NZAC). TH–Great Island (NZAC). First New Zealand records: MC, Christchurch, 1965 (NZAC); Dumbleton (1967). Extralimital range: Nearctic Region, Palaearctic Region.

Biology. Lowland. Collected on cat-mint (*Nepeta faassenii*), clare sage (*Salvia sclarea*), horehound (*Marrubium vulgare*), *Lavandula*, lemon balm (*Melissa officinalis*), mint (*Mentha*), sage (*Salvia officinalis*); also *Rosmarinus officinalis* (adults, one nymph) and in large numbers on *Alcea rosea* leaves. Seasonality: October–March, mostly January–February. [Parenchyma-feeder.] Wing condition: Macropterous. Economic importance: Potential pest of commercial herb gardens.

References. Dumbleton, 1967 (biology, distribution; as *Cicadella melissae*). Metcalf, 1968: 696–701, 1498 (catalogue, world; as *Cicadella melissae*). Knight, 1976a (biology, distribution, taxonomy). Wise, 1977: 81 (checklist, New Zealand). Charles, 2004 (economic importance).

Genus *Ribautiana* Zachvatkin, 1947^A

Synonymy (see Metcalf, 1968; Oman *et al.*, 1990; Day & Fletcher, 1994).

Geographic distribution. Nearctic Region, Palaearctic Region (adventive elsewhere); Australian Region (continental Australia, Tasmania, New Zealand).

References. Metcalf, 1968: 907–933 (catalogue, world). Knight, 1976a (New Zealand, taxonomy). Wise, 1977: 81 (checklist, New Zealand). Fletcher & Williams, 1987 (Australia, distribution, taxonomy; *R. ulmi*). Oman *et al.*, 1990: 248 (bibliography, checklist, genera, world). Day & Fletcher, 1994: 1230 (Australia, catalogue).

Ribautiana tenerrima (Herrich-Schäffer, 1834)^A

Synonymy (see Metcalf, 1968; Larivière & Fletcher, 2004).

Common name: Bramble Leafhopper.

Geographic distribution (Map p. 209). North Island: AK–Auckland (Greenlane (NZAC); Mount Albert (NZAC); Te Atatu (NZAC); Titirangi (NZAC)). CL–Coroglen (NZAC). South Island: CO–“Central Otago” (Charles, 1989). MC–Riccarton (Knight, 1976a). Otahuna (Knight, 1976a). Selwyn Bridge (Knight, 1976a). Springston (Knight, 1976a). NN–Nelson (NZAC). WD–Alex Knob (NZAC). First New Zealand records: AK, Greenlane, 1949 (NZAC); MC, Lincoln, 1950 (Dumbleton 1964). Extralimital range: Nearctic Region, Palaearctic Region.

Biology. Lowland. Collected on *Rubus fruticosus*, *Quercus* (adults, nymphs), *Betula alba* (in nursery), *Rubus idaeus* (adults). Feeds on raspberries, boysenberries, blackberries, and wild brambles, the latter a huge food-reservoir outside commercial berryfruit gardens. Seasonality: November–April. [Parenchyma-feeder.] Wing condition: Macropterous. Economic importance: May be a minor pest in commercial berryfruit gardens; may be able to transfer phytoplasmas between *Rubus* plants.

References. Metcalf, 1968: 913–921 (catalogue, world). Knight, 1976a (biology, distribution, taxonomy). Wise, 1977: 81 (checklist, New Zealand). Charles, 1989 (biology). Wood *et al.*, 1999 (economic importance, phytoplasmas). Charles, 2004 (economic importance, feeding).

Note. More detailed information on the biology of this species can be found in Charles (1989).

Subfamily ULOPINAE

References. Evans, 1937 (Australia, revision), 1947b (taxonomy). Metcalf, 1962b (catalogue, world). Evans, 1971b (Africa, taxonomy). Knight, 1973b (New Zealand, revision). Evans, 1977 (Australia, New Zealand, taxonomy). Wise, 1977 (checklist, New Zealand). Fletcher *et al.*, 1991b (Australia, overview; under Cicadelloidea). Day & Fletcher, 1994 (Australia, catalogue). Fletcher & Larivière, 2001 (Australia, New Zealand; checklist, identification). Fletcher & Watson, 2002b (Australia, checklist; updated by Fletcher, 2006). Szwedo, 2002 (overview, Palearctic Region). Larivière & Fletcher, 2004 (checklist, identification, New Zealand). Larivière, 2005 (checklist, New Zealand).

Tribe CEPHALELINI

Genus *Paracephaleus* Evans, 1942^N

Paracephaleus Evans, 1942b: 49. Type species: *Paracephaleus montanus* Evans, 1942b, by original designation. Synonymised with *Notocephalius* Jacobi, 1909, by Evans, 1947b: 145. Reinstated as valid genus by Evans, 1966: 93.

Geographic distribution. Australia (continental, Tasmania), New Zealand.

References. Metcalf, 1962b: 47–50 (catalogue, world; as *Notocephalius*). Knight, 1973b (New Zealand, revision). Evans, 1966 (Australia, key, New Zealand, taxonomy), 1977 (Australia, checklist, key, New Zealand). Wise, 1977: 76 (checklist, New Zealand). Day & Fletcher, 1994: 1126 (Australia, catalogue).

Note. Day & Fletcher (1994) recorded *P. montanus* (Evans, 1942b) from Tasmania and New Zealand but this species does not occur in New Zealand.

Paracephaleus curtus Knight, 1973^E

Type photograph p. 161.

Paracephaleus curtus Knight, 1973b: 985. Holotype male (NZAC); NN, Mount Augustus.

Geographic distribution (Map p. 207). North Island: TO–Mount Ruapehu, Chateau (NZAC). South Island: NN–Denniston (NZAC). Mount Augustus (NZAC).

Biology. [Montane, subalpine.] Collected on *Chionochloa rubra* (adults, both sexes) and from moss and mat plants (adults, nymphs). Seasonality: November, January, March. [Phloem-feeder.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent or fully developed (latter known in females only).

References. Knight, 1973b (biology, distribution, taxonomy, wing condition). Evans, 1977 (checklist, taxonomy). Wise, 1977: 76 (checklist, New Zealand).

Paracephaleus hudsoni (Myers, 1923)^E

Type photograph p. 161.

Cephalelus hudsoni Myers, 1923a: 417. Holotype male (NZAC ex BMNH); WN, Wellington, Breaker Bay.

Cephalelus leptocarpus Myers, 1923a: 420. Holotype* male (BMNH); ND, Whangarei. Synonymised by Knight, 1973b: 982.

Notocephalius leptocarpus: Evans, 1947b: 148.

Notocephalius hudsoni: Evans, 1947b: 148.

Paracephaleus hudsoni: Evans, 1966: 94.

Paracephaleus leptocarpus: Evans, 1966: 94.

Paracephaleus hudsoni: Knight, 1973b: 982.

Geographic distribution (Map p. 207). North Island: AK, CL, ND, TO, WN. South Island: BR, DN—near Palmerston (NZAC), NN.

Biology. [Lowland, often coastal.] Collected on *Leptocarpus simplex* [= *Apodasmia similis*] (adult female) and *Empodisma minus* (adult female, 2 nymphs) in gumlands (ND), strongly suggesting that Restionaceae are used as hostplants. Also found on tidal flats, in hot pools, and in swamps. Seasonality: October–February, June (adults); November (nymphs). [Phloem-feeder.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent or fully developed (latter known in females only).

References. Metcalf, 1962b: 48–49 (catalogue, world; as *Notocephalius hudsoni*, *N. leptocarpus*). Evans, 1966 (checklist; as *Paracephaleus hudsoni* and *P. leptocarpus*). Knight, 1973b (biology, distribution, taxonomy, wing condition). Evans, 1977 (checklist, taxonomy). Wise, 1977: 76 (checklist, New Zealand).

Tribe ULOPINI

Genus *Novolopa* Evans, 1966^E

Novolopa Evans, 1966: 88. Type species: *Novolopa townsendi* Evans, 1966, by original designation.

Geographic distribution. New Zealand.

References. Knight, 1973b (revision). Evans, 1977 (checklist). Wise, 1977: 76 (checklist, New Zealand).

Notes. *Novolopa* species are mainly ground-dwelling insects living among leaf litter, grass and mats of low growing plants; hindwings are absent in all known species.

Novolopa falcata Knight, 1973^E

Type photograph p. 156.

Novolopa falcata Knight, 1973b: 975. Holotype male (NZAC); FD, Turret Range, Mount Grey.

Geographic distribution (Map p. 205). South Island: CO–Rock and Pillar Range (NZAC). FD–Fiordland National Park, Lake Orbell (South side) (NZAC). Hunter Mountains (Monowai (NZAC); Mount Burns (Knight, 1973b); South Borland Range (Knight, 1973b)). Turret

Range (Knight, 1973b) (Mount Grey (Knight, 1973b); Percy Saddle (South of) (Knight, 1973b)).

Biology. [Montane, alpine.] Collected on *Pimelea* (adults of both sexes, nymphs), *Gaultheria*, various mat plants, grass (adults, both sexes); also on and under *Helichrysum* [= *Anaphalioides*] *bellidioides* or in leaf litter in general (adults). [Hostplant: *Pimelea*.] Seasonality: November–January. [Phloem-feeder.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition). Evans, 1977 (checklist). Wise, 1977: 76 (checklist, New Zealand).

***Novolopa infula* Knight, 1973^E**

Type photograph p. 156.

Novolopa infula Knight, 1973b: 976. Holotype male (NZAC); FD, Wilmot Pass, Mount Barber.

Geographic distribution (Map p. 205). South Island: FD–Turret Range (Knight, 1973b), Mount Grey (Knight, 1973b). Wilmot Pass, Mount Barber (NZAC).

Biology. [Subalpine, alpine.] Collected in grass and on mat plants. Seasonality: January. [Phloem-feeder.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition). Evans, 1977 (checklist). Wise, 1977: 76 (checklist, New Zealand).

***Novolopa kuscheli* Knight, 1973^E**

Type photograph p. 156.

Novolopa kuscheli Knight, 1973b: 978. Holotype male (NZAC); Stewart Island, Mount Rakeahua.

Geographic distribution (Map p. 205). South Island: FD–Wilmot Pass (Knight, 1973b). Stewart Island: Big South Cape Island (North Peak (Knight, 1973b); South Peak (Knight, 1973b)). Mount Rakeahua (NZAC). Table Hill (Knight, 1973b).

Biology. [Montane (lower), subalpine.] Collected at base of *Celmisia*, in cushion plants and mat plants. Seasonality: November, January, February (mostly). [Phloem-feeder.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition). Evans, 1977 (checklist). Wise, 1977: 76 (checklist, New Zealand).

***Novolopa maculata* Knight, 1973^E**

Type photograph p. 156

Novolopa maculata Knight, 1973b: 976. Holotype male (NZAC); OL, Queenstown, Mount Coronet [=Coronet Peak].

Geographic distribution (Map p. 205). South Island: FD–Hunter Mountains, Monowai (Knight, 1973b). Turret Range (Knight, 1973b), Mount Grey (Knight, 1973b). OL–Coronet Peak (NZAC). Matura [River] Valley (E of Eyre Mountains) (NZAC).

Biology. [Subalpine, alpine.] Collected on *Drapetes* [= *Kelleria*] (adults of both sexes, nymph), on *Celmisia ramulosa*, *Dracophyllum*, and in leaf litter (adults). [Hostplant: *Kelleria*.] Seasonality: November–January (mostly), February. [Phloem-feeder.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition). Wise, 1977: 76 (checklist, New Zealand).

***Novolopa montivaga* Knight, 1973^E**

Type photograph p. 157.

Novolopa montivaga Knight, 1973b: 978. Holotype male (NZAC); CO, Old Man Range.

Geographic distribution (Map p. 205). South Island: CO–Old Man Range (Knight, 1973b), Hyde Rocks (15 km S of Alexandra) (NZAC). Rock and Pillar Range (NZAC) (Leaning lodge (NZAC); Red Hut (NZAC)). SL–Blue Mountains (NZAC). Upper Matura Valley (NZAC).

Biology. [Subalpine, alpine.] Collected on *Celmisia sessiliflora* on swards (adults of both sexes, nymphs). Seasonality: September–March. [Phloem-feeder.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition). Evans, 1977 (checklist). Wise, 1977: 76 (checklist, New Zealand).

***Novolopa townsendi* Evans, 1966^E**

Type photograph p. 157.

Novolopa townsendi Evans, 1966: 88. Holotype female (NZAC); NN, Mount Owen.

Geographic distribution (Map p. 205). South Island: NN–Ben Nevis (NZAC). Mount Arthur (NZAC). Mount Domett (NZAC). Mount Owen (NZAC).

Biology. [Subalpine, alpine.] Collected in leaf litter and on *Blechnum penna-marina*. Seasonality: November–March. [Phloem-feeder.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition). Wise, 1977: 76 (checklist, New Zealand).

Subfamily XESTOCEPHALINAE

Tribe XESTOCEPHALINI

Genus *Xestocephalus* Van Duzee, 1892^N

Xestocephalus Van Duzee, 1892: 298. Type species: *Xestocephalus pulicarius* Van Duzee, 1894, designated by Distant, 1908: 348.

Nesotettix Lindberg, 1936: 6. Type species: *Nesotettix freyi* Lindberg, 1936, by original designation. Preoccupied.

Lindbergana Metcalf, 1952: 229. Replacement name for *Nesotettix* Lindberg. Synonymised by Linnavuori, 1959: 36.

Geographic distribution. Worldwide.

References. Evans, 1966 (Australia, key, New Zealand, taxonomy). Metcalf, 1967c: 2355–2380 (catalogue, world). Knight, 1974b (New Zealand, taxonomy). Wise, 1977: 79 (checklist, New Zealand). Oman *et al.*, 1990: 260 (bibliography, checklist, genera, world). Day & Fletcher, 1994: 1222–1223 (Australia, catalogue).

Genus *Xestocephalus ovalis* Evans, 1966^E

Xestocephalus ovalis Evans, 1966: 256. Holotype* female (MONZ; could not be located); WN, Wellington.

Geographic distribution (Map p. 209). North Island: AK, BP, CL, GB, HB, ND, RI, TO, WI, WN, WO. South Island: BR, CO, DN, FD, MC, MK, NC, NN, OL, SC, SD, SL, WD. Offshore Islands: CH, TH.

Biology. [Lowland, montane.] Collected mostly on grasses, rushes, and sedges in open, often marshy habitats such as pastures, forest clearings, coastal or montane environments; also on *Cyathea*, moss, *Raoulia*; in leaf litter or in rotten wood (in winter or at higher altitude). Seasonality: Throughout the year, mostly January–March. [Phloem-feeder.] Wing condition: Submacropterous, nearly macropterous.

References. Evans, 1966 (biology, taxonomy). Knight, 1974b (biology, distribution, taxonomy), 1976a (biology, distribution). Wise, 1977: 79 (checklist, New Zealand).

Notes. The female holotype is supposed to be deposited in MONZ but could not be located by Knight (1974b), the present authors, nor MONZ's curator (R. Palma, personal communication). Four species of this genus occur in Australia (Day & Fletcher, 1994). According to Knight (1974b), an illustration of the male genitalia of *X. australensis* Kirkaldy given by Evans (1966) suggests that *X. ovalis* may be conspecific with the Australian species.

Family MEMBRACIDAE

Horned treehoppers

References. Goding, 1903 (Australia, revision). Zimmerman, 1948 (Hawaii, revision). Kato, 1960 (Micronesia, revision). Metcalf & Wade, 1963 (bibliography, world). Metcalf & Wade, 1965 (catalogue, world). Evans, 1966 (Australia, revision). Broomfield, 1971 (BMNH types). Eyles, 1971 (family record, New Zealand). Strumpel, 1972 (phylogeny, world). Wise, 1977 (checklist, New Zealand). Fletcher *et al.*, 1991b (Australia, overview; under Cicadelloidea). Deitz & Dietrich, 1993 (classification, world). Dietrich & Deitz, 1993 (phylogeny, world). Day, 1999 (Australia, genera, review). Dietrich *et al.*, 2001a–b (morphological and molecular phylogeny, world). Fletcher & Larivière, 2001 (Australia, New Zealand; checklist, identification). Fletcher & Watson, 2002b (Australia, checklist; updated by Fletcher, 2006). Larivière & Fletcher, 2004 (checklist, identification, New Zealand). Wallace & Deitz, 2004 (phylogeny, systematics; world Centrotinae). Larivière, 2005 (checklist, New Zealand).

Subfamily CENTROTINAE

Reference. Wallace & Deitz, 2004 (phylogeny, systematics, world).

Tribe TEREINTINI

Reference. Wallace & Deitz, 2006 (Australia, biogeography, phylogeny).

Genus *Acanthuchus* Stål, 1866^A

Acanthuchus Stål, 1866a: 87. Type species: *Centrotus trispinifer* Fairmaire, 1846 designated by Stål, 1866b: 386.

Geographic distribution. Australia (continental, Tasmania), western Indonesia, India; New Zealand (adventive).

References. Metcalf & Wade, 1965: 227–232 (catalogue, world). Evans, 1966 (Australia, key, taxonomy). Wise, 1977: 82 (checklist, New Zealand). Day & Fletcher, 1994: 1249–1250 (Australia, catalogue). Wallace & Deitz, 2006 (biogeography, phylogeny).

Genus *Acanthuchus trispinifer* (Fairmaire, 1846)^A

Centrotus trispinifer Fairmaire, 1846: 515. Syntype(s)* status and repository undetermined; Australia.

Acanthuchus [sic] *trispinifer*: Stål, 1866b: 386.

Acanthuchus gracilispinus Stål, 1869: 287. Syntype(s) female(s)* (NHRM); “Australia borealis.” Synonymised by Evans, 1966: 295.

Geographic distribution (Map p. 219). North Island: AK–Auckland (Bastion Point (NZAC); Greenlane

(NZAC). South Island: BR–Cobden Beach (NZAC). Kokiri (NZAC). NN–Mawhera State Forest, Wallaby Creek (NZAC). First New Zealand record: BR–Kokiri, 1971 (NZAC; Eyles, 1971). Extralimital range: Australia (continental, Tasmania).

Biology. [Lowland.] Collected on *Chrysanthemoides monilifera* (adults, nymphs; in numbers), *Rubus idaeus* (adults, nymphs); also on *Cytisus–Cotoneaster* association, *Coprosma robusta*, *Rubus australis* (adults only). Hostplant (Australia): *Acacia decurrens* (Mimosaceae). Seasonality: December–March, May. [Phloem-feeder.] Wing condition: Submacropterous to macropterous.

References. Metcalf & Wade, 1965: 231–232 (catalogue, world). Evans, 1966 (Australia, taxonomy). Eyles, 1971 (biology, distribution, New Zealand). Wise, 1977: 82 (checklist, New Zealand). Cookson & New, 1980 (Australia, biology). Day & Fletcher, 1994: 1250 (Australia, catalogue).

Family MYERSLOPIIDAE

Ground-dwelling leafhoppers

References. Metcalf, 1962b (catalogue, world; as *Myerslopiia*). Knight, 1973b (New Zealand, revision). Evans, 1977 (Australia, New Zealand, taxonomy). Wise, 1977 (checklist, New Zealand). Fletcher *et al.*, 1991b (Australia, overview; under Cicadelloidea). Day & Fletcher, 1994 (Australia, catalogue). Hamilton, 1999b (classification, family status, genera, New Zealand). Fletcher & Larivière, 2001 (Australia, New Zealand; checklist, identification). Fletcher & Watson, 2002b (Australia, checklist; updated by Fletcher, 2006). Larivière & Fletcher, 2004 (checklist, identification, New Zealand). Szwedo, 2004a (Chile, New Zealand, taxonomy), 2004b (world checklist, distribution, origin). Cryan, 2005 (classification, phylogeny). Larivière, 2005 (checklist, New Zealand).

Notes. Adults and nymphs are ground-dwelling, generally wingless leafhoppers occurring in decomposing leaf litter, soil debris with high organic content or moss growing in open or forested environments. Myerslopiidae are believed to be fungivores (Szwedo, 2004b) but a predacious life style has also been hypothesised for *Mapucheia chilensis* (Nielson, 1996) which, if true, would be an exception within the Auchenorrhyncha.

Subfamily MYERSLOPIINAE

Tribe MYERSLOPIINI

Genus *Myerslopiia* Evans, 1947^E

Myerslopiia Evans, 1947b: 143. Type species: *Myerslopiia magna* Evans, 1947b, by original designation.

Geographic distribution. New Zealand.

References. Evans, 1947b (description, ecology, wing condition). Metcalf, 1962b: 95 (catalogue, world). Evans, 1966 (New Zealand, taxonomy). Knight, 1973b (revision). Wise, 1977: 76 (checklist, New Zealand). Hamilton, 1999b (biogeography, classification, taxonomy). Szwedo, 2004b: 4 (checklist, world).

Note. Some undescribed species from Chile, previously reported as possibly belonging to *Myerslopiia* (e.g., Evans, 1961; Hamilton, 1999b), have now been placed in the genus *Mapucheia* Szwedo, 2004a, with *Myerslopiia chilensis* Nielson, 1996, as the type species.

Myerslopiia magna amplificata Knight, 1973^E

Type photograph p. 187.

Myerslopiia magna amplificata Knight, 1973b: 1004. Holotype male (NZAC); BR, Punakaiki, Bullock Creek.

Geographic distribution (Map p. 219). South Island: BR–Punakaiki, Bullock Creek.

Biology. [Lowland.] Habitat: Unknown. Seasonality: October. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition). Wise, 1977: 76 (checklist, New Zealand). Szwedo, 2004b: 4 (checklist, world; distribution, New Zealand).

Myerslopiia magna magna Evans, 1947^E

Type photograph p. 187.

Myerslopiia magna magna Evans, 1947b: 144. Holotype female (NZAC ex BMNH); TO, Waimarina [=Waimarino River]. *Myerslopiia magna magna*: Knight, 1973b: 988.

Geographic distribution (Map p. 219). North Island: HB, TK, TO. South Island: MB, NN, SD.

Biology. [Montane, subalpine.] Collected in leaf litter, mixed moss and mat plants, and on *Celmisia* (adults, nymphs); also in moss from clay banks. Seasonality: August–January, March. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings vestigial.

References. Metcalf, 1962b: 95 (catalogue, world; as *Myerslopiia magna*). Evans, 1966 (taxonomy; as *Myerslopiia magna*). Knight, 1973b (biology, distribution, taxonomy; as *Myerslopiia magna*). Wise, 1977: 76 (checklist, New Zealand; as *Myerslopiia magna* and *M. magna magna*). Szwedo, 2004b: 4 (checklist, world; distribution, New Zealand).

Myerslopiia magna scabrata Knight, 1973^E

Type photograph p. 187.

Myerslopiia magna scabrata Knight, 1973b: 1003. Holotype male (NZAC); FD, Wilmot Pass.

Geographic distribution (Map p. 219). South Island: FD–Hollyford Valley (“7 miles into”) (Knight, 1973b). Wilmot Pass (NZAC).

Biology. [Montane.] Collected in moss, on mat plants, on *Polystichum vestitum* (adults, nymphs); in leaf litter. Seasonality: January–February. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition). Wise, 1977: 77 (checklist, New Zealand). Szwedo, 2004b: 4 (checklist, world; distribution, New Zealand).

Myerslopiya rakiuraensis Szwedo, 2004^E

Type photograph p. 187.

Myerslopiya rakiuraensis Szwedo, 2004a: 11. Holotype male (NZAC ex MHNG); Stewart Island, Oban.

Geographic distribution (Map p. 220). Stewart Island: Oban.

Biology. [Lowland.] Collected in podocarp-broadleaf forest, in fern gully (adults, nymphs). Seasonality: February. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

Reference. Szwedo, 2004b: 4 (checklist, world; biology, distribution, New Zealand).

Myerslopiya tawhai Szwedo, 2004^E

Type photograph p. 188.

Myerslopiya tawhai Szwedo, 2004a: 14. Holotype female (NZAC ex MHNG); SL, Longwood Range.

Geographic distribution (Map p. 220). South Island: SL–Longwood Range.

Biology. [Lowland.] Collected in *Nothofagus menziesii* forest. Seasonality: February. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

Reference. Szwedo, 2004b: 4 (checklist, world; biology, distribution, New Zealand).

Note. The holotype is a female specimen, not a male as stated by Szwedo (2004a); male unknown.

Myerslopiya tearohai Szwedo, 2004^E

Type photograph p. 188.

Myerslopiya tearohai Szwedo, 2004a: 17. Holotype female (NZAC ex MHNG); BP, Mount Te Aroha.

Geographic distribution (Map p. 220). North Island: BP–Mount Te Aroha.

Biology. [Montane.] Collected in *Nothofagus menziesii* forest. Seasonality: February. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

Reference. Szwedo, 2004b: 4 (checklist, world; biology, distribution, New Zealand).

Myerslopiya triregia Knight, 1973^E

Type photograph p. 188.

Myerslopiya triregia Knight, 1973b: 1005. Holotype male (NZAC); TH, Great Island, Tasman Valley.

Geographic distribution (Map p. 220). Offshore Islands: TH–Great Island, Tasman Valley.

Biology. [Lowland.] Collected in leaf litter (adults, nymphs). Seasonality: November. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition). Evans, 1977 (checklist; as *Myerslopiya aspera*). Wise, 1977: 77 (checklist, New Zealand). Szwedo, 2004b: 4 (checklist, world; distribution, New Zealand).

Myerslopiya whakatipuensis Szwedo, 2004^E

Type photograph p. 188.

Myerslopiya whakatipuensis Szwedo, 2004a: 13. Holotype male (NZAC ex MHNG); FD, Fiordland National Park, Hollyford Valley, Lake Marian Track.

Geographic distribution (Map p. 220). South Island: FD–Fiordland National Park, Hollyford Valley, Lake Marian Track.

Biology. [Lowland.] Habitat: Unknown. Seasonality: February. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

Reference. Szwedo, 2004b: 4 (checklist, world; biology, distribution, New Zealand).

Genus *Pemmaton* Hamilton, 1999^E

Pemmaton Hamilton, 1999b: 226. Type species: *Myerslopiya parva* Evans, 1947b, by original designation.

Geographic distribution. New Zealand.

References. Evans, 1966 (New Zealand, taxonomy; as *Myerslopiya*). Hamilton, 1999b (biogeography, classification, taxonomy). Szwedo, 2004b: 4 (checklist, world).

Pemmaton asperum asperum (Knight, 1973)^E

Type photograph p. 189.

Myerslopiya aspera Knight, 1973b: 998. Holotype male (NZAC); WN, Otaki Forks.

Myerslopiya aspera aspera Knight, 1973b: 999.

Myerslopiya aspera: Evans, 1977: 102.

Pemmaton aspera [sic]: Hamilton, 1999b: 227.

Pemmaton aspera [sic] *aspera* [sic]: Szwedo, 2004b: 4.

Geographic distribution (Map p. 220). North Island: WA–Aorangi Mountains, Haurangi (Knight, 1973b; as *Myerslopiya aspera*). Pori (Knight, 1973b; as *Myerslopiya aspera*). WN–East Tararua (=Tararua Range), Mount Holdsworth track (Knight, 1973b; as *Myerslopiya aspera*). Otaki Forks (NZAC).

Biology. [Lowland, montane] Collected in leaf litter (adults, nymphs); also in moss from forest (e.g., *Nothofagus*). Seasonality: September, February. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition; as *Myerslophia aspera*). Evans, 1977 (checklist; as *Myerslophia aspera*). Wise, 1977: 76 (checklist, New Zealand; as *Myerslophia aspera* and *Myerslophia aspera aspera*). Szvedo, 2004b: 4 (checklist, world; distribution, New Zealand).

Note. *Pemmaton* is a neuter noun, therefore requiring an adjective with a neuter ending.

***Pemmaton asperum cognatum* (Knight, 1973)^E**

Type photograph p. 189.

Myerslophia aspera cognata Knight, 1973b: 998. Holotype male (NZAC); MC, [Christchurch] McLennans Bush.

Pemmaton aspera [*sic*] *cognata* [*sic*]: Szvedo, 2004b: 4.

Geographic distribution (Map p. 220). South Island: MC–McLennans Bush (NZAC). Sharplin Falls, Bowyers Stream (NZAC).

Biology. [Lowland, montane.] Collected in moss. Seasonality: February. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition; as *Myerslophia aspera cognata*). Wise, 1977: 76 (checklist, New Zealand; as *Myerslophia aspera cognata*). Szvedo, 2004b: 4 (checklist, world; distribution, New Zealand).

Note. *Pemmaton* is a neuter noun, therefore requiring an adjective with a neuter ending.

***Pemmaton bifurca* (Knight, 1973)^E**

Type photograph p. 189.

Myerslophia bifurca Knight, 1973b: 994. Holotype male (NZAC); AK, Waitakere Ranges.

Myerslophia bifurcata [*sic*]: Evans, 1977: 102.

Pemmaton bifurca: Hamilton, 1999b: 227.

Geographic distribution (Map p. 220). North Island: AK–Huia (Knight, 1973b; as *Myerslophia bifurca*). Waitakere Ranges (NZAC). CL–Kirikiri Saddle (NZAC).

Biology. [Lowland, montane (lower).] Collected in forest leaf litter. Seasonality: October, January, April, August. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition; as *Myerslophia bifurca*). Evans, 1977 (checklist; as *Myerslophia bifurcata* [*sic*]). Wise, 1977: 76 (checklist, New Zealand; as *Myerslophia bifurca*). Szvedo, 2004b: 5 (checklist, world).

Note. The localities listed by Knight, 1973b, Huia and Waitakere Ranges, are from the Auckland area, not Northland as indicated by Szvedo (2004b).

***Pemmaton insulare* (Knight, 1973)^E**

TPP 189.

Myerslophia insularis Knight, 1973b: 992. Holotype male (NZAC); NN, Nelson, Waimea West, Eves Valley, Palmers Bush.

Pemmaton insularis [*sic*]: Hamilton, 1999b: 227.

Geographic distribution (Map p. 220). South Island: NN–Nelson, Waimea West, Eves Valley, Palmers Bush (NZAC). Tasman Bay, Fisherman’s Island [=Fisherman Island] (Knight, 1973b; as *Myerslophia insularis*).

Biology. [Lowland.] Collected in forest leaf litter (adults, nymphs). Seasonality: October, July. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition; as *Myerslophia insularis*). Evans, 1977 (checklist; as *Myerslophia insularis*). Wise, 1977: 76 (checklist, New Zealand; as *Myerslophia insularis*). Szvedo, 2004b: 5 (checklist, world; distribution, New Zealand).

Note. *Pemmaton* is a neuter noun, therefore requiring an adjective with a neuter ending.

***Pemmaton montis* (Knight, 1973)^E**

Type photograph p. 190.

Myerslophia montis Knight, 1973b: 994. Holotype male (NZAC); SD, Mount Stokes.

Pemmaton montis: Hamilton, 1999b: 227.

Geographic distribution (Map p. 221). South Island: SD–Mount Stokes.

Biology. [Montane.] Collected in forest leaf litter and moss. Seasonality: March. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition; as *Myerslophia montis*). Evans, 1977 (checklist; as *Myerslophia montis*). Wise, 1977: 77 (checklist, New Zealand; as *Myerslophia montis*). Szvedo, 2004b: 5 (checklist, world; distribution, New Zealand).

***Pemmaton parvum* (Evans, 1947)^E**

Type photograph p. 190

Myerslophia parva Evans, 1947b: 144. Holotype female (NZAC ex BMNH); TO, Ohakune.

Pemmaton parva [*sic*]: Hamilton, 1999b: 227.

Pemmaton parvus [*sic*]: Szvedo, 2004b: 5.

Geographic distribution (Map p. 221). North Island: AK, BP, CL, GB, HB, RI, TO, WA, WN, WO. South Island: BR, MB, NN, SD, WD.

Biology. Lowland, subalpine. Collected mostly in moss and leaf litter, also on mat plants, e.g. *Raoulia* (adults and nymphs); also in forested and open habitats such as broadleaf or *Nothofagus* forests, tussock grasslands, rock faces and banks. [Hostplant: *Raoulia*.] Seasonality: Throughout the year, mostly October–February. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Metcalf, 1962b: 95 (catalogue, world; as *Myerslopiya parva*). Evans, 1966 (taxonomy; as *Myerslopiya parva*). Knight, 1973b (biology, distribution, taxonomy, wing condition; as *Myerslopiya parva*). Wise, 1977: 77 (checklist, New Zealand; as *Myerslopiya parva*). Szewo, 2004a, 2004b: 5 (checklist, world; distribution, New Zealand).

Note. *Pemmation* is a neuter noun, therefore requiring an adjective with a neuter ending.

Pemmation simile (Knight, 1973)^E

Type photograph p. 190.

Myerslopiya similis Knight, 1973b: 994. Holotype male (NZAC); WD, Mount Hercules.

Pemmation similis [sic]: Hamilton, 1999b: 227.

Geographic distribution (Map p. 221). South Island: WD–Arthur’s Pass, Temple Basin (Knight, 1973b; as *Myerslopiya similis*). Lake Ianthe State Forest (NZAC). Lake Kaniere (Knight, 1973b; as *Myerslopiya similis*). Mount Hercules (NZAC).

Biology. [Lowland to subalpine.] Collected in forest leaf litter and moss (e.g., moss from banks). Seasonality: November, May. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition; as *Myerslopiya similis*). Evans, 1977 (checklist; as *Myerslopiya similis*). Wise, 1977: 77 (checklist, New Zealand; as *Myerslopiya similis*). Szewo, 2004b: 5 (checklist, world; distribution, New Zealand).

Note. *Pemmation* is a neuter noun, therefore requiring an adjective with a neuter ending.

Pemmation terrestre (Knight, 1973)^E

Type photograph p. 190.

Myerslopiya terrestris Knight, 1973b: 1000. Holotype male (NZAC); WN, Orongorongo Field Station.

Pemmation terrestris [sic]: Hamilton, 1999b: 227.

Geographic distribution (Map p. 221). North Island: WA–Lake Wairarapa (Northwest side) (Knight, 1973b; as *Myerslopiya terrestris*). Tauweru (7 miles E) (Knight, 1973b; as *Myerslopiya terrestris*). WN–Makara (Knight, 1973b; as *Myerslopiya terrestris*). Orongorongo Field/Research Station (NZAC). Somes Island (NZAC).

Biology. [Lowland.] Collected mostly in forest leaf litter

(adults, nymphs); also in moss (e.g., from ground and roots). Seasonality: September, December, February, May. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition; as *Myerslopiya terrestris*). Evans, 1977 (checklist; as *Myerslopiya terrestris*). Wise, 1977: 77 (checklist, New Zealand; as *Myerslopiya terrestris*). Szewo, 2004b: 5 (checklist, world; distribution, New Zealand).

Note. *Pemmation* is a neuter noun, therefore requiring an adjective with a neuter ending.

Pemmation townsendi (Knight, 1973)^E

Type photograph p. 191.

Myerslopiya townsendi Knight, 1973b: 995. Holotype male (NZAC); WD, Lake Wahapo.

Pemmation townsendi: Hamilton, 1999b: 227.

Geographic distribution (Map p. 221). South Island: CO, DN, FD, NN, SL, WD.

Biology. Lowland to subalpine. Collected in moss and leaf litter, in forests (e.g., *Dracophyllum* or *Nothofagus* forests) and in tussock grasslands. Seasonality: September–April. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition; as *Myerslopiya townsendi*). Evans, 1977 (checklist; as *Myerslopiya townsendi*). Wise, 1977: 77 (checklist, New Zealand; as *Myerslopiya townsendi*). Szewo, 2004a, 2004b: 5 (checklist, world; biology, distribution, New Zealand).

Note. Contrary to the distribution given by Szewo (2004b), this species has not been recorded from the Mackenzie region of the South Island.

Pemmation variabilis austrinum (Knight, 1973)^E

Type photograph p. 191.

Myerslopiya variabilis austrina Knight, 1973b: 997. Holotype male (NZAC); SC, Waimate, Kelsey’s Bush [=Kelceys Bush].

Pemmation variabilis [sic] *austrina* [sic]: Szewo, 2004b: 5.

Geographic distribution (Map p. 221). South Island: SC–Waimate, Kelceys Bush (NZAC). SL–Birch Island (NZAC).

Biology. [Lowland.] Collected in leaf litter. Seasonality: December–January. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition; as *Myerslopiya variabilis austrina*). Wise, 1977: 77 (checklist, New Zealand; as *Myerslopiya variabilis austrina*). Szewo, 2004b: 5 (checklist, world; distribution, New Zealand).

Note. *Pemmation* is a neuter noun, therefore requiring an adjective with a neuter ending.

***Pemmaton variabile variabile* (Knight, 1973)^E**

Type photograph p. 191.

Myerslopiya variabilis Knight, 1973b: 997. Holotype male (NZAC); NN, Takaka Hill.

Myerslopiya variabilis variabilis: Knight, 1973b: 999.

Pemmaton variabilis [sic]: Hamilton, 1999b: 227.

Pemmaton variabilis [sic] *variabilis* [sic]: Swedo, 2004b: 5.

Geographic distribution (Map p. 221). South Island: BR, NN, WD.

Biology. [Montane (lower), subalpine.] Collected in forest leaf litter (e.g., *Nothofagus* forest); also mat samples from *Celmisia discolor* and *Chionochoa australis* (adults, nymphs). Seasonality: September–December, March–April, July. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition; as *Myerslopiya variabilis*). Evans, 1977 (checklist; as *Myerslopiya variabilis*). Wise, 1977: 77 (checklist, New Zealand; as *Myerslopiya variabilis* and *M. variabilis variabilis*). Szewo, 2004b: 5 (checklist, world; distribution, New Zealand).

Note. *Pemmaton* is a neuter noun, therefore requiring an adjective with a neuter ending.

***Pemmaton verrucosum* (Knight, 1973)^E**

Type photograph p. 191.

Myerslopiya verrucosa Knight, 1973b: 1000. Holotype male (NZAC); WI, Hunterville, Bruce Park.

Pemmaton verrucosa [sic]: Hamilton, 1999b: 227.

Geographic distribution (Map p. 221). North Island: RI–Taihape (NZAC). TO–Erua (NZAC). National Park (NZAC). Ohakune (NZAC). Raurimu (Knight, 1973b; as *Myerslopiya verrucosa*). Taumarunui (Knight, 1973b; as *Myerslopiya verrucosa*). WI–Hunterville, Bruce Park (NZAC). WN–Taraia Range, Judd Ridge, Otaki Forks (NZAC).

Biology. Lowland, montane. Collected in forest leaf litter (adults, nymphs); also mixed leaf litter and moss. Seasonality: November–January. [Fungivore.] Wing condition: Forewings nearly macropterous, coriaceous; hindwings absent.

References. Knight, 1973b (biology, distribution, taxonomy, wing condition; as *Myerslopiya verrucosa*). Evans, 1977 (checklist; as *Myerslopiya verrucosa*). Wise, 1977: 77 (checklist, New Zealand; as *Myerslopiya verrucosa*). Szewo, 2004b: 5 (checklist, world; distribution, New Zealand).

Note. *Pemmaton* is a neuter noun, therefore requiring an adjective with a neuter ending.

Infraorder FULGOROMORPHA

References. Wilson, 2005 (keys to families, Nearctic). Bourgoin, 2008 (checklist, world). Fletcher, 2009 (Australia, keys to families).

Superfamily FULGOROIDEA**Family ACHILIDAE****Achilid planthoppers**

References. Muir, 1927 (revision, Samoa). Metcalf, 1948 (catalogue, world). Fennah, 1950a (revision of genera), 1950b (Fiji, revision), 1956 (Micronesia, revision), 1969 (New Caledonia, revision). Wise, 1977 (checklist, New Zealand). Deitz & Helmore, 1979 (identification, New Zealand). Emeljanov, 1991 (classification, world). Fletcher & Carver, 1991 (Australia, overview; under Fulgoroidea). Fletcher & Larivière, 2001 (Australia, New Zealand; checklist, identification). Fletcher & Watson, 2003 (Australia, checklist; updated 2006). Emeljanov, 2005 (Australia, taxonomy). Larivière, 2005 (checklist, New Zealand). Fletcher, 2009 (Australia, key to tribes).

Subfamily ACHILINAE**Tribe ACHILINI****Genus *Achilus* Kirby, 1818^A**

Achilus Kirby, 1818: 474. Type species: *Achilus flammeus* Kirby, 1818, by monotypy.

Geographic distribution. Australia (New South Wales, Queensland, South Australia, Victoria); New Zealand (adventive).

References. Metcalf, 1948: 19–22 (catalogue, world). Fennah, 1950a (Australia, nomenclature, taxonomy). Wise, 1977: 70 (checklist, New Zealand). Deitz & Helmore, 1979 (identification, New Zealand).

Note. According to Fennah (1950a), the only species in the genus is the type, *A. flammeus*.

***Achilus flammeus* Kirby, 1818^A**

Achilus flammeus Kirby, 1818: 475.

Common names: Red Fungus Bug, Red Fingernail Bug.

Geographic distribution (Map p. 199). North Island: AK–Auckland (NZAC) (Browns Bay (NZAC); Mount Eden). First New Zealand records: Auckland, 1946 (Turbott & Woodward, 1954), 1954 (NZAC). Extralimital range: Australia (New South Wales, Queensland, South Australia, Victoria).

Biology. [Lowland.] Collected in urban settings, e.g., on a washing line, in a shop, on the floor of a restaurant. In Australia, nymphs have been found in termite mounds. Seasonality: February–August. Fungivore (nymph); phloem-feeder (adult). Wing condition: Macropterous.

References. Metcalf, 1948: 21–22 (catalogue, world). Turbott & Woodward, 1954 (Australia, biology, distribution, New Zealand). Wise, 1977: 70 (checklist, New Zealand). Fletcher & Larivière, 2001 (Australia, New Zealand; checklist, identification). Fletcher, 2009 (Australia, checklist, distribution, identification).

Notes. Turbott & Woodward (1954) noted that the apparent restriction of this species to an area close to wharves supported its relatively recent introduction. He also observed that all specimens he had examined had been females. NZAC has only a few specimens collected in Auckland in 1964, 1991 and 1997. The bright red colouration is limited to the adults; the nymphs are dark brown.

Tribe PLECTODERINI

Genus *Agandecca* White, 1879^E

Agandecca White, 1879: 217. Type species: *Agandecca annectens* White, 1879, by monotypy.

Geographic distribution. New Zealand.

References. Metcalf, 1948: 13–14 (catalogue, world). Fennah, 1950a (distribution, taxonomy). Wise, 1977: 70 (checklist, New Zealand). Deitz & Helmore, 1979 (identification).

Agandecca annectens White, 1879^E

Agandecca annectens White, 1879: 218. Lectotype* male (designated by Deitz, in Deitz & Helmore, 1979; Perth Museum and Art Gallery, Scotland); New Zealand.

Geographic distribution (Map p. 199). North Island: AK, BP, GB, HB, ND, TK, TO, WI, WN. South Island: BR, FD, MB, MC, NC, NN, OL, SD, WD.

Biology. Lowland to subalpine. Found in and around native forests and shrublands (mostly podocarps and/or *Nothofagus*), including *Agathis australis* forest undergrowth, on *Cassinia* [= *Ozothamnus*?] and *Olearia*, on *Collospermum*, on *Nothofagus* (including *N. fusca* and *N. menziesii*), and on subalpine vegetation; also collected on grass and on *Phormium*. Seasonality: September, October–December (mostly), January–March. [Fungivore (nymph); phloem-feeder (adult).] Wing condition: Macropterous.

References. Metcalf, 1948: 13–14 (catalogue, world). Fennah, 1950a (taxonomy). Wise, 1977: 70 (checklist, New Zealand).

Notes. Fennah (1950a) illustrated a specimen which he referred to as the “holotype” of *A. annectens*, but Deitz & Helmore (1979) obtained the syntype series from the Perth Museum and Art Gallery, Scotland, and designated a lectotype. Fennah’s reference to a holotype does not represent a lectotype designation by default because it is unclear to which specimen Fennah (1950a) referred.

Family CIXIIDAE

Cixiid planthoppers

References. Muir, 1927 (revision, Samoa). Metcalf, 1936 (catalogue, world), 1946a (Guam, revision). Zimmerman, 1948 (Hawaii, revision). Fennah, 1950b (Fiji, revision), 1956 (Micronesia, revision), 1969 (New Caledonia, revision). Wise, 1977 (checklist, New Zealand). Deitz & Helmore, 1979 (identification, New Zealand). Emeljanov, 1989 (classification, world). Hoch & Howarth, 1989a–b (Australia, cavernicolous taxa). Fletcher & Carver, 1991 (Australia, overview; under Fulgoroidea). Larivière, 1997a (New Zealand, overview), 1999 (New Zealand, revision). Emeljanov, 2000 (Australia and vicinity, New Zealand, taxonomy). Fletcher & Larivière, 2001 (Australia, New Zealand; checklist, identification). Emeljanov, 2002 (classification, phylogeny, world). Holzinger *et al.*, 2002 (overview, world). Fletcher & Watson, 2003 (Australia, checklist; updated 2006). Larivière, 2005 (checklist, New Zealand). Hoch, 2006a (Hawaii, taxonomy), 2006b (Polynesia, taxonomy). Löcker *et al.*, 2006a (Australia, taxonomy; Mnemosynini), 2006b (Australia, key; Pentastirini), 2006c (Australia, revision; Pentastirini), 2006d (Australia, phylogeny, revision; Gelastocephalini), 2006e (Australia, key; Gelastocephalini), 2007a (Australia, revision; Brixini, in part.), 2007b (Australia, revision; Andini). Ceotto & Bourgoin, 2008 (classification, phylogeny, world).

Subfamily CIXIINAE

Tribe CIXIINI

Genus *Aka* White, 1879^N

Aka White, 1879: 216. Type species: *Cixius finitimus* Walker, 1858a, by original designation.

Geographic distribution. Australia (continental, Tasmania), New Zealand.

References. Metcalf, 1936: 123–124 (catalogue, world). Larivière, 1999 (New Zealand, revision).

***Aka dunedinensis* Larivière, 1999^E**

Type photograph p. 178.

Aka dunedinensis Larivière, 1999: 19. Holotype male (NZAC): DN, Ross Creek Reservoir.

Geographic distribution (Map p. 214). South Island: DN–Dunedin (AMNZ). Ross Creek Reservoir (NZAC). SL–Hokonui Hills, Dolamore Park (NZAC). Owaka (NZAC).

Biology. Montane (lower). Habitat poorly known; two specimens recorded from *Nothofagus* forest (SL, Owaka) and from ferns (SL, Dolamore Park). Seasonality: January–February, April. [Phloem-feeder.] Wing condition: Submacropterous.

Reference. Larivière, 1999 (biology, distribution, taxonomy).

Note. See under *Aka finitima*.

***Aka duniana* (Myers, 1924)^E**

Type photograph p. 178.

Malpha duniana Myers, 1924b: 323. Holotype male (NZAC ex BMNH); NN, Dun Mountain.

Aka duniana: Fennah, 1975a: 380.

Geographic distribution (Map p. 214). North Island: HB, TO, WN. South Island: KA, MC, NN, SD.

Biology. Lowland (often coastal), montane. Occurs on ground cover or shrubs, in and at the margins of *Nothofagus* or mixed forests, shrublands and scrublands. Seasonality: September–July, mostly December–February. [Phloem-feeder.] Wing condition: Submacropterous.

References. Myers, 1924b (biology; as *Malpha duniana*). Metcalf, 1936: 43 (catalogue, world; as *Malpha duniana*). Larivière, 1999 (biology, distribution, taxonomy).

Notes. This species has often been confused with *Aka finitima* prior to 1999. Additional information on taxonomy, distribution and biology can be found in Larivière (1999). See also **Notes** under *Aka finitima*.

***Aka finitima* (Walker, 1858)^E**

Cixius finitimus Walker, 1858a: 81. Holotype female (BMNH); New Zealand [=Auckland, see **Notes**].

Aka finitima: White, 1879: 216.

Geographic distribution (Map p. 214). North Island: AK, BP, CL, ND, RI, TO, WI, WN.

Biology. Lowland (often coastal), montane (lower). Recorded from *Nothofagus* (*N. fusca*, *N. menziesii*) forests or mixed forests, shrublands, and scrublands; also collected on *Coprosma* (mostly) and *Xeronema*. Seasonality: December–May. [Phloem-feeder.] Wing condition: Submacropterous.

References. Metcalf, 1936: 123–124 (catalogue, world).

Larivière, 1999 (biology, distribution, taxonomy).

Notes. The holotype was collected by Lieutenant Colonel D. Bolton and bears the BMNH accession number 54.4; such specimens are likely to be from Auckland (see Dugdale, 1988). Myers (1924b) redescribed this species from several specimens from “Wellington District, Tararua Range, Canterbury and Dunedin”. Larivière (1999) established that these specimens belonged to *Aka duniana*, except for the Dunedin specimens, which were of *Aka dunedinensis*. *Aka finitima* is a North Island species while *Aka duniana* is found on both sides of the Cook Strait, in southern areas of the North Island (with a disjunct distribution on the Central Volcanic Plateau) and in northern areas of the South Island. Additional information on taxonomy, distribution and biology can be found in Larivière (1999).

***Aka rhodeae* Larivière, 1999^E**

Type photograph p. 178.

Aka rhodei [sic] Larivière, 1999: 21. Holotype male (NZAC); TO, Pureora [State Forest Park], Waipapa Reserve.

Geographic distribution (Map p. 214). North Island: RI–Mangahua Stream (NZAC). TO–Pureora State Forest Park, Waipapa Reserve (NZAC). WO–Waikato-Waipakihi Rivers junction (NZAC).

Biology. Montane (lower). Collected in shrubland terrace with pumice soil and a dominant vegetation of *Dracophyllum subulatum*, *Coprosma*, and *Pseudopanax* (TO, Pureora State Forest Park). Seasonality: November–March, mostly December and February. [Phloem-feeder.] Wing condition: Submacropterous.

Reference. Larivière, 1999 (biology, distribution, taxonomy).

Note. The original spelling of the specific name created by Larivière (1999) was incorrect; it should have been of feminine gender.

***Aka westlandica* Larivière, 1999^E**

Type photograph p. 178.

Aka westlandica Larivière, 1999: 22. Holotype male (NZAC); FD, Thompson Sound, Bauza Island.

Geographic distribution (Map p. 214). South Island: BR, CO, FD, MC, NN, OL, SL, WD. Stewart Island.

Biology. Lowland (often coastal), montane (lower). Occurs in and at the margins of *Nothofagus* or mixed forests, shrublands, and scrublands; often collected on *Coprosma* in coastal areas or by sweeping ferns (e.g., *Blechnum*) in forested areas; also recorded from the native plants *Ascarina lucida*, *Carpodetus serratus*, *Meliclytus*, *Schefflera digitata*, *Pseudopanax crassifolius*, *P. simplex* [= *Raukaua simplex*], tree ferns, and *Weinmannia racemosa*. Males and females have also been collected at night on *Blechnum capense*

(FD, March). Seasonality: October–March, mostly December–February. [Phloem-feeder.] Wing condition: Submacropterous.

Reference. Larivière, 1999 (biology, distribution, taxonomy).

Note. Additional information on distribution can be found in Larivière (1999).

Genus *Cermada* Emeljanov, 2000^E

Cermada Emeljanov, 2000: 251. Type species: *Cixius kermadecensis* Myers, 1924b, by original designation.

Geographic distribution. New Zealand.

Reference. Larivière, 1999 (key to species, New Zealand, revision; as *Cixius*).

Notes. The scant taxonomic knowledge available on *Cixius* in general, and on Australian taxa in particular, did not allow Larivière (1999) to consider an alternative generic affiliation for New Zealand taxa previously placed in the cosmopolitan genus *Cixius*. Emeljanov (2000) described the genus *Cermada* to accommodate four New Zealand species (*Cixius aspilus*, *C. kermadecensis*, *C. punctimargo*, and *C. interior*) apparently overlooking the facts that Larivière (1999) had already invalidated the name *C. aspilus* by finding its holotype to be a hybrid, recognised *C. interior* to be a junior synonym of *C. punctimargo*, and described two new species (*Cixius inexpectatus*, *C. triregius*). However, Emeljanov's paper is labelled "Received August 29, 1999" and it may be a simple case of publication overlap with Larivière's monograph published in November 1999. Nevertheless, this situation resulted in creating more confusion and doubt as to the correct generic affiliation of New Zealand "*Cixius*" species. The species *Cixius inexpectatus* and *C. triregius* have been compared, using museum specimens, against the description of the genus *Cermada* published by Emeljanov (2000), its type species (*C. kermadecensis*), and specimens of *Cermada punctimargo*. As a result two new combinations are made here. Emeljanov (2000) also noted that species from New Caledonia, described by Distant in the genus *Cixius*, may also be of this genus.

Cermada inexpectata (Larivière, 1999)^E new combination

Type photograph p. 179.

Cixius inexpectatus Larivière, 1999: 25. Holotype male (NZAC); TO, Pureora [State Forest Park], Waipapa Reserve.

Cixius aspilus Walker, 1858a [part]. Synonymised by Larivière, 1999: 25.

Geographic distribution (Map p. 214). North Island: AK, CL, ND, TO.

Biology. Lowland (often coastal), montane (lower). Occurs in scrublands, shrublands, and open broadleaf or mixed broadleaf-podocarp forests; collected frequently on *Meliclytus*, *Coprosma*, and *Pseudopanax*. Seasonality: September–March, mostly December–January. [Phloem-feeder.] Wing condition: Macropterous.

Reference. Larivière, 1999 (biology, distribution, taxonomy; as *Cixius inexpectatus*).

Notes. This is the species listed as *Cixius aspilus* Walker, 1858, by Emeljanov (2000: 252), the name of which had already been invalidated by Larivière (1999) because it was based on an animal shown to be a hybrid. Additional information on distribution can be found in Larivière (1999).

Cermada kermadecensis (Myers, 1924)^E

Type photograph p. 179.

Cixius kermadecensis Myers, 1924b: 319. Holotype female (NZAC ex BMNH); Kermadec Islands, Sunday Island [=Raoul Island] (Myers, 1924b).

Cermada kermadecensis: Emeljanov, 2000: 251.

Geographic distribution (Map p. 214). Offshore Islands: KE.

Biology. Mostly unknown. Collected on *Macropiper excelsum*. [Phloem-feeder.] Wing condition: Macropterous.

References. Metcalf, 1936: 180 (catalogue, world). Larivière, 1999 (checklist, New Zealand; as *Cixius kermadecensis*).

Cermada punctimargo (Walker, 1858)^E

Cixius punctimargo Walker, 1858a: 81. Holotype* female (BMNH); New Zealand [=Auckland, see **Notes**].

Cixius interior Walker, 1858a: 82. Holotype* female (BMNH); New Zealand [=Auckland, see **Notes**]. Synonymised by Larivière, 1999: 26; incorrectly used as a valid name by Emeljanov, 2000: 252.

Cermada punctimargo: Emeljanov, 2000: 252.

Geographic distribution (Map p. 215). North Island: AK, BP, CL, GB, ND.

Biology. Lowland (often coastal), montane (lower). Occurs in scrublands, shrublands, and open broadleaf or mixed podocarp-broadleaf forests; collected frequently on *Meliclytus*, *Coprosma*, and *Pseudopanax*. Seasonality: September–January, mostly November. [Phloem-feeder.] Wing condition: Macropterous.

References. Metcalf, 1936: 207 (catalogue, world). Larivière, 1999 (biology, distribution, taxonomy; as *Cixius punctimargo*).

Notes. The holotype was collected by Lieutenant Colonel D. Bolton and bears the BMNH accession number 54.4; such specimens are likely to be from Auckland (see Dugdale, 1988). Additional information on distribution can be found in Larivière (1999).

***Cermada triregia* (Larivière, 1999) ^E new combination**

Type photograph p. 179.

Cixius triregius Larivière, 1999: 27. Holotype male (NZAC); Three Kings Islands, Great Island, Castaway Camp.

Geographic distribution (Map p. 215). Offshore Islands: TH—Great Island (NZAC); Castaway Camp (AMNZ, MONZ, NZAC), Summit Ridge (NZAC); Tasman Valley (NZAC). West Island (NZAC).

Biology. Lowland (coastal). Scrublands and shrublands; found in association with *Myoporum laetum* and *Solanum aviculare* var. *albiflorum*. Seasonality: November, January. [Phloem-feeder.] Wing condition: Macropterous.

Reference. Larivière, 1999 (biology, distribution, taxonomy; as *Cixius triregius*).

Genus *Chathamaka* Larivière, 1999 ^E

Chathamaka Larivière, 1999: 23. Type species: *Chathamaka andrei* Larivière, 1999, by original designation.

Geographic distribution. New Zealand (Chatham Islands only).

Reference. Larivière, 1999 (taxonomy).

***Chathamaka andrei* Larivière, 1999 ^E**

Type photograph p. 179.

Chathamaka andrei Larivière, 1999: 23. Holotype male (NZAC); CH, Pitt Island, Glory Scenic Reserve.

Geographic distribution (Map p. 215). Offshore Islands: CH—Pitt Island (CMNZ, NZAC): Cannister Cove Scientific Reserve (LUNZ, MONZ, NZAC); Glory Bay (NZAC); Glory Scenic Reserve (LUNZ); Kaingaroa (CMNZ); Waipaua—Glory Bay (LUNZ).

Biology. Lowland (coastal). Occurs in podocarp-broadleaf forests, shrublands, and scrublands; collected on vegetation in regenerating *Dracophyllum* forest, shrubs (*Brachyglottis huntii*, *Coprosma chathamica*, *Melicytus chathamicus*, *Myoporum*), the edge of a remnant forest, and herbs and grasses hanging from coastal rocks. Seasonality: November–February. [Phloem-feeder.] Wing condition: Macropterous or submacropterous, with forewings welded together dorsally in some individuals.

Reference. Larivière, 1999 (biology, distribution, taxonomy).

Genus *Cixius* Latreille, 1804

(See Genus *Cermada* Emeljanov, 2000)

Reference. Metcalf, 1936: 148–223 (catalogue, world).

Note. New Zealand species listed by Larivière (1999) and previous authors under *Cixius* are now placed in the genus *Cermada* Emeljanov, 2000.

Genus *Confuga* Fennah, 1975 ^E

Confuga Fennah, 1975a: 377. Type species: *Confuga persephone* Fennah, 1975a, by original designation.

Geographic distribution. New Zealand.

Reference. Larivière, 1999 (taxonomy).

***Confuga persephone* Fennah, 1975 ^E**

Confuga persephone Fennah, 1975a: 379. Holotype* male (NZAC, presumably lost); NN, Takaka, Council Cave. The holotype could not be located; it may have been lost in the 2004 move of NZAC from Mt Albert to St Johns (Auckland).

Geographic distribution (Map p. 215). South Island: NN—Council Cave, Takaka.

Biology. Subterranean. Occurs in limestone caves. Seasonality: October–June. Food: Roots of trees which penetrate well below the limestone surface. [Phloem-feeder.] Wing condition: Submacropterous.

References. Millar, 1998 (feeding). Larivière, 1999 (biology, distribution, taxonomy).

Notes. Nymphs of a very similar planthopper found in a cave at Paynes Ford Scenic Reserve, several kilometres west of Council Cave, appear to be of the same genus, perhaps even the same species. It seems likely that the same species, or similar species, will eventually turn up in other limestone sites in the same region (Millar, 1998).

Genus *Huttia* Myers, 1924 ^E

Huttia Myers, 1924b: 321. Type species: *Huttia nigrifrons* Myers, 1924b, by original designation.

Geographic distribution. New Zealand.

References. Metcalf, 1936: 42–43 (catalogue, world). Larivière, 1999 (revision).

Note. Larivière (1999) showed the female holotype of *Huttia harrisi* Myers, 1924b, to be conspecific with *Semo westlandiae* Larivière & Hoch, 1998 (see *Semo harrisi*).

***Huttia nigrifrons* Myers, 1924 ^E**

Type photograph p. 180.

Huttia nigrifrons Myers, 1924b: 321. Holotype female (NZAC); WN, Upper Hutt.

Geographic distribution (Map p. 215). North Island: AK, BP, CL, ND, TO, WN.

Biology. Lowland. Inhabits mixed podocarp-broadleaf forests and their margins, where it is mostly found on podocarp trees; also beaten from coastal shrubs, swept from podocarps (*Dacrydium cupressinum*, *Halocarpus kirkii*), collected on *Prumnopitys ferruginea* (branch trap), and once found on a young tree fern. Seasonality: October–

May, mostly October–November. [Phloem-feeder.] Wing condition: Macropterous.

References. Metcalf, 1936: 43 (catalogue, world). Larivière, 1999 (biology, distribution, taxonomy).

Notes. Additional information on distribution can be found in Larivière (1999). This species is rather widely distributed on the North Island, but it is never locally abundant. Along with *Semo* species, this is the only New Zealand cixiid for which a close association with Podocarpaceae is suspected.

***Huttia northlandica* Larivière, 1999^E**

Type photograph p. 180.

Huttia northlandica Larivière, 1999: 30. Holotype male (NZAC); ND, Omahuta State Forest.

Geographic distribution (Map p. 215). North Island: ND–Omahuta State Forest (MONZ, NZAC). Mataraua Forest, Waioku Coach Road track (NZAC). Waipoua State Forest (MONZ, NZAC), South Highway 12 (AMNZ). Warawara State Forest (AMNZ, NZAC).

Biology. [Lowland.] Habitat unknown, but probably similar to that of *H. nigrifrons*. Seasonality: September–October, July. [Phloem-feeder.] Wing condition: Macropterous.

Reference. Larivière, 1999 (biology, distribution, taxonomy).

Genus *Koroana* Myers, 1924^E

Koroana Myers, 1924b: 319. Type species: *Cixius rufifrons* Walker, 1858a, designated by Larivière, 1999: 30, and resurrected from synonymy with *Cixius interior*.

Geographic distribution. New Zealand.

References. Metcalf, 1936: 146–147 (catalogue, world). Larivière 1997b, 1999 (revision).

***Koroana arthuria* Myers, 1924^E**

Type photograph p. 180.

Koroana arthuria Myers, 1924b: 320. Holotype male (NZAC ex BMNH); NC, Arthur's Pass.

Geographic distribution (Map p. 215). South Island: FD, MC, MK, NC, OL, SL. Stewart Island.

Biology. Lowland, montane (higher). Occurs at the margins of forests and shrublands; collected frequently on *Hebe* (including *H. odora*), also on *Cassinia* [= *Ozothamnus*?], *Coprosma parviflora*, *Metrosideros*, *Olearia avicenniifolia*, and *Brachyglottis buchananii*; found in numbers under stones, in some cases in association with small ants (nymphs). Seasonality: November–February, mostly late January–February. [Phloem-feeder.] Wing condition: Macropterous.

References. Myers, 1924b (ant-association, biology). Metcalf, 1936: 147 (catalogue, world). Larivière, 1997b, 1999 (biology, distribution, taxonomy).

Note. Additional information on distribution can be found in Larivière (1999).

***Koroana lanceleti* Larivière, 1997^E**

Type photograph p. 180.

Koroana lanceleti Larivière, 1997b: 221. Holotype male (NZAC); OL, Dart Hut.

Geographic distribution (Map p. 215). South Island: BR, CO, FD, MB, MK, NN, OL, WD.

Biology. Lowland to subalpine. Occurs in forest margins and shrublands; collected regularly on *Olearia* (including *O. moschata*, *O. avicenniifolia*, *O. lacunosa*), *Hebe* (especially *H. salicifolia* and *H. subalpina*), and *Coprosma*; other associated plant records include *Carmichaelia*, *Cassinia*, and *Aristotelia fruticosa*. Seasonality: November–April, July. [Phloem-feeder.] Wing condition: Macropterous.

References. Larivière, 1997b, 1999 (biology, distribution, taxonomy).

Note. Additional information on distribution can be found in Larivière (1999).

***Koroana rufifrons* (Walker, 1858)^E**

Cixius interior Walker, 1858a: 82. Incorrect synonymy of Myers, 1927: 689.

Cixius rufifrons Walker, 1858a: 83. Holotype male (BMNH); New Zealand. Resurrected from synonymy with *Cixius interior* by Larivière, 1999: 33.

Koroana helena Myers, 1924b: 319. Holotype male [presumed from original description] (“Myers collection, Department of Agriculture” [but probably in BMNH]); [type locality not mentioned] (Myers, 1924b). Synonymised by Myers, 1927: 689.

Koroana interior: Myers, 1927: 689. Incorrect combination.

Koroana interior: Larivière, 1997b: 219.

Koroana rufifrons: Larivière, 1999: 33.

Geographic distribution (Map p. 215). North Island: AK, BP, CL, GB, HB, ND, RI, TK, TO, WA, WI, WN, WO. South Island: BR, KA, MB, MC, NN, SD, SL.

Biology. Lowland (coastal), montane (lower). Occurs on trees and shrubs of forest margins and shrublands, often at the sides of streams; frequently collected on *Hebe parviflora* and other *Hebe* species (including *H. stricta* and *H. divaricata*) and on *Meliccytus ramiflorus*; found less frequently on *Coriaria arborea*, *Fuchsia* and, on rare occasions, *Hoheria*, *Metrosideros*, *Nothofagus*, *Pittosporum*, *Pseudowintera*, or *Weinmannia*; large numbers of newly-emerged individuals collected in November in mixed vegetation of *Fuchsia-Meliccytus-Hebe* in the Waimana Valley

(Urewera National Park, BP) near a stream at the edge of a mixed podocarp-broadleaf forest. Seasonality: October–April, mostly January–February (adults). [Phloem-feeder.] Wing condition: Macropterous.

References. Metcalf, 1936: 147 (catalogue, world; *Koroana interior*). Larivière, 1997b, 1999 (biology, distribution, taxonomy).

Notes. The holotype was collected by Lieutenant Colonel D. Bolton and bears the BMNH accession number 54.4; such specimens are likely to be from Auckland (see Dugdale, 1988). Additional information on distribution can be found in Larivière (1999).

Genus *Malpha* Myers, 1924^E

Malpha Myers, 1924b: 322. Type species: *Malpha muiri* Myers, 1924b, by original designation.

Geographic distribution. New Zealand.

Reference. Larivière, 1999 (revision).

Malpha cockcrofti Myers, 1924^E

Type photograph p. 181.

Malpha cockcrofti Myers, 1924b: 323. Holotype female (NZAC ex BMNH); WD, Otira.

Geographic distribution (Map p. 216). South Island: BR–Buller Gorge, Dublin Terrace (NZAC). Fletcher Creek (NZAC). Paparoa Range: adjacent Croesus Knob (NZAC); Buckland Peaks (NZAC). WD–Otira (NZAC).

Biology. Montane (lower), subalpine. Mostly found in subalpine environments in the South Island. [Hostplant: *Olearia colensoi* on which specimens of both sexes collected (January, Croesus Knob).] One other specimen recorded from *Celimisia* flowers (November, Buckland Peaks). Seasonality: November, January. [Phloem-feeder.] Wing condition: Macropterous.

References. Myers, 1924b (biology, taxonomy). Metcalf, 1936: 43 (catalogue, world). Larivière, 1999 (biology, distribution, taxonomy).

Malpha muiri Myers, 1924^E

Type photograph p. 181.

Malpha muiri Myers, 1924b: 322. Holotype male (NZAC ex BMNH); WN, Mount Alpha.

Malpha iris Myers, 1924b: 323. Holotype female (NZAC); WN, York Bay. Synonymised by Larivière, 1999: 36.

Geographic distribution (Map p. 216). North Island: WN–Tararua Range, Mount Alpha (NZAC). York Bay (NZAC). South Island: BR–Lewis Pass (NZAC).

Biology. Lowland, montane (lower). Taken from the undergrowth of shrubby *Senecio* and *Olearia* in *Nothofagus*

forest. Seasonality: November. [Phloem-feeder.] Wing condition: Macropterous.

References. Myers, 1924b (biology, taxonomy). Metcalf, 1936: 43 (catalogue, world). Larivière, 1999 (biology, distribution, taxonomy).

Tribe OECLEINI

Genus *Tiriteana* Myers, 1924^E

Tiriteana Myers, 1924b: 325. Type species: *Tiriteana clarkei* Myers, 1924b, by original designation.

Geographic distribution. New Zealand.

References. Metcalf, 1936: 244 (catalogue, world). Larivière, 1999 (taxonomy).

Tiriteana clarkei Myers, 1924^E

Tiriteana clarkei Myers, 1924b: 325. Holotype* female (BMNH); BP, Mamaku.

Geographic distribution (Map p. 216). North Island: AK, BP, CL, GB, ND, TK, TO, WN, WO.

Biology. Lowland, montane. Found mainly in or at the edge of podocarp-broadleaf forests (e.g., *Beilschmiedia tarairi* forests); recorded from *Coprosma rhamnoides*, other *Coprosma* species, and *Carpodetus serratus* (in large numbers). [Hostplant: *Carpodetus serratus*; teneral collected in numbers in December (Wanganui National Park, TK).] Seasonality: October–February, mostly January. [Phloem-feeder.] Wing condition: Macropterous.

References. Metcalf, 1936: 244 (catalogue, world). Larivière, 1999 (biology, distribution, taxonomy).

Tribe PENTASTIRINI

References. Löcker *et al.*, 2006b (Australia, key), 2006c (Australia, revision).

Genus *Oliarus* Stål, 1862

(See Genus *Zeoliarus* Larivière & Fletcher, 2008)

Note. New Zealand species listed by previous authors under *Oliarus* are now placed in the genus *Zeoliarus* Larivière & Fletcher, 2008.

Genus *Zeoliarus* Larivière & Fletcher, 2008^E

Zeoliarus Larivière & Fletcher, 2008: 67. Type species: *Oliarus atkinsoni* Myers, 1924b, by original designation.

Geographic distribution. New Zealand.

References. Metcalf, 1936: 44–108 (catalogue, world; as

Oliarus). Larivière, 1999 (New Zealand, revision; as *Oliarus*). Emeljanov, 2001 (classification, Oriental Region, taxonomy; as *Oliarus sensu stricto*). Hoch, 2005 (classification, definition, type species; *Oliarus*). Löcker *et al.*, 2006c (Australia, revision; as *Oliarus*).

Notes. Emeljanov (2001) and Hoch (2005) have clarified the definition of *Oliarus* Stål, 1862, *sensu stricto*. Löcker *et al.* (2006c) established the identities of Australian Pentastirini.

***Zeoliarus atkinsoni* (Myers, 1924) ^E**

Oliarus atkinsoni Myers, 1924b: 325. Holotype* male (BMNH); WN, Gollans Valley.

Zeoliarus atkinsoni: Larivière & Fletcher, 2008: 66.

Common name: Flax Planthopper.

Geographic distribution (Map p. 216). North Island: AK, BP, CL, ND, TK, TO, WN. South Island: BR—Springs Junction (south end of Palmers Road) (NZAC).

Biology. Lowland. Occurs in *Phormium* marshes where it can be found, often in copula, on the shaded side of *Phormium* leaves. Seasonality: November–March. Economic importance: Vector of the Yellow Leaf Disease of *Phormium*. Phloem-feeder (mostly). Wing condition: Macropterous.

References. Metcalf, 1936: 53 (catalogue, world). Cumber, 1952b–d, 1953a–d, 1954a–c (biology, disease vector, distribution, life cycle). Larivière, 1999 (biology, distribution, taxonomy).

Note. For additional information on life cycle, biology, ecology, distribution, and the role of this species as disease vector, see Larivière (1999).

***Zeoliarus oppositus* (Walker, 1851) ^E**

Cixius oppositus Walker, 1851a: 345. Holotype* male (BMNH); New Zealand.

Oliarus oppositus: White, 1879: 216.

Cixius marginalis Walker, 1858a: 82. Syntypes* status uncertain (BMNH); Walker's original description indicates that the species is based on two specimens, "a, b. New Zealand. Presented by Colonel Bolton." Synonymised by Myers, 1927: 690.

Zeoliarus oppositus: Larivière & Fletcher, 2008: 66.

Geographic distribution (Map p. 217). North Island: AK, BP, CL, GB, HB, ND, RI, TK, TO, WA, WI, WN, WO. South Island: BR, CO, DN, FD, KA, MB, MC, MK, NC, NN, OL, SC, SD, SL, WD. Stewart Island. Offshore Islands: TH.

Biology. Lowland to subalpine. Occurs in natural, as well as modified, habitats (e.g., marshes, grasslands, grassy forest clearings, pastures), on low herbage (especially grasses)

rather than bushes like most of the New Zealand Cixiidae. Seasonality: October–April, mostly summer months. Phloem-feeder. Wing condition: Macropterous.

References. Metcalf, 1936: 87–88 (catalogue, world). Larivière, 1999 (biology, distribution, taxonomy).

Note. This is the most commonly encountered cixiid in New Zealand.

Tribe SEMONINI

Genus *Parasemo* Larivière, 1999 ^E

Parasemo Larivière, 1999: 37. Type species: *Parasemo hutchisoni* Larivière, 1999, by original designation.

Geographic distribution. New Zealand.

Reference. Larivière, 1999 (taxonomy).

***Parasemo hutchisoni* Larivière, 1999 ^E**

Type photograph p. 181.

Parasemo hutchisoni Larivière, 1999: 37. Holotype male (NZAC); TO, Pureora [State Forest Park], Waipapa Reserve.

Geographic distribution (Map p. 216). North Island: BP—Mount Te Aroha (BMNH, NZAC). TO—Pureora State Forest Park, Waipapa Reserve (AMNZ, MONZ, NZAC).

Biology. Lowland, montane (lower). Collected in podocarp-broadleaf shrublands. Seasonality: October–December. [Phloem-feeder.] Wing condition: Macropterous.

Reference. Larivière, 1999 (biology, distribution, taxonomy).

Genus *Semo* White, 1879 ^E

Semo White, 1879: 217. Type species: *Semo clypeatus* White, 1879, by monotypy.

Geographic distribution. New Zealand.

References. Metcalf, 1936: 116 (catalogue, world). Larivière & Hoch, 1998 (revision). Larivière, 1999 (revision).

***Semo clypeatus* White, 1879 ^E**

Semo clypeatus White, 1879: 217. Lectotype* male (designated by Deitz, in Deitz & Helmore, 1979; Perth Museum and Art Gallery, Scotland); New Zealand.

Geographic distribution (Map p. 216). North Island: GB, TK, TO. South Island: BR, MB, MC, NC, NN.

Biology. Montane, subalpine. Occurs in shrublands and grasslands, often in the vicinity of streams; found on *Hebe stricta* (tenerals and fully mature adults); also on *Brachyglottis eleagnifolius*, *Cassinia vauvilliersii*

[=*Ozothamnus leptophyllus*], *Coprosma-Olearia* associations, *Dracophyllum longifolium*, *Hebe-Uncinia* associations, *Nothofagus fusca*, tussocks, and mat plants. [Hostplant: *Halocarpus biformis* on which large numbers were taken in late December in subalpine scrubland at the summit of Mount Pureora (TO).] Seasonality: November–February, mostly November and January. [Phloem-feeder.] Wing condition: Submacropterous to macropterous.

References. Metcalf, 1936: 116 (catalogue, world). Larivière & Hoch, 1998 (biology, distribution, taxonomy). Larivière, 1999 (biology, distribution, taxonomy).

Note. Additional information on distribution can be found in Larivière (1999).

Semo harrisi (Myers, 1924) ^E

Type photograph p. 181.

Huttia harrisi Myers, 1924b: 322. Holotype female (NZAC ex BMNH); [WD] “West Coast”, South Island.

Semo westlandiae Larivière & Hoch, 1998: 440. Holotype male (NZAC); BR–Mount Sewell. Synonymised by Larivière, 1999: 40.

Semo harrisi: Larivière, 1999: 40.

Geographic distribution (Map p. 216). South Island: BR, DN, FD, MK, NC, NN, OL, SL, WD. Stewart Island.

Biology. Montane, subalpine. Occurs in shrublands and grasslands, often in the vicinity of streams; on Stewart Island, apparently in podocarp-broadleaf forest. Found mostly on *Dracophyllum* (including *D. traversii* and *D. longifolium*) and *Coprosma propinqua* (teneral and adults), which may act as hostplants. In addition, adults have been recorded on *Hebe*, *Olearia ilicifolia*, tussock, and other, yet undetermined, subalpine plants. Seasonality: November–February, mostly December. [Phloem-feeder.] Wing condition: Submacropterous to macropterous.

References. Metcalf, 1936: 43 (catalogue, world; as *Huttia harrisi*). Larivière & Hoch, 1998 (biology, distribution, taxonomy). Larivière, 1999 (biology, distribution, taxonomy).

Note. Additional information on distribution can be found in Larivière (1999).

Semo southlandiae Larivière & Hoch, 1998 ^E

Type photograph p. 182.

Semo southlandiae Larivière & Hoch, 1998: 436. Holotype male (NZAC); SL, Takitimu Range, Tower Peak.

Geographic distribution (Map p. 216). South Island: DN–Berwick State Forest, Meggat Burn (OMNZ). MC–Porters Pass (NZAC). Staveley (NZAC). MK–Mount Cook National Park (LUNZ). SL–Blue Mountains (OMNZ). Mokoreta No. 2 (NZAC). Mount Hedgehope (NZAC). Slopdown Range (NZAC). Takitimu Range:

Cheviot Hills Face (NZAC); Tower Peak (LUNZ).

Biology. Montane, subalpine. Occurs in shrublands and grasslands, often in the vicinity of streams; found on *Coprosma-Cassinia-Dracophyllum* associations in tussocks, *Hebe odora*, vegetation surrounding bogs and in a *Nothofagus* forest. Seasonality: December–February, mostly January. [Phloem-feeder.] Wing condition: Submacropterous to macropterous.

References. Larivière & Hoch, 1998 (biology, distribution, taxonomy). Larivière, 1999 (biology, distribution, taxonomy).

Note. Additional information on distribution can be found in Larivière (1999).

Semo transinsularis Larivière & Hoch, 1998 ^E

Type photograph p. 182.

Semo transinsularis Larivière & Hoch, 1998: 438. Holotype male (NZAC); WN, Tararua Range, Dundas Hut.

Geographic distribution (Map p. 216). North Island: RI–Ruahine Range, Shuteye Camp (NZAC). TO–Tongariro National Park: Mount Ruapehu (NZAC). Ohakune (NZAC). WN–Tararua Range: Dundas Hut/Ridge (MONZ, NZAC); Logan E Basin (NZAC). South Island: BR–Fletcher Creek (NZAC). NN–Mount Arthur Range (NZAC): Balloon Hut (NZAC); Flora Track (NZAC).

Biology. Montane, subalpine. Occurs in shrublands and grasslands, often in the vicinity of streams; found mostly on *Chionochloa* (teneral and adults); also on *Hebe rakaiensis*, *Olearia lacunosa*, and *Nothofagus* (adults). Seasonality: November–February, mostly December and February. [Phloem-feeder.] Wing condition: Submacropterous to macropterous.

References. Larivière & Hoch, 1998 (biology, distribution, taxonomy). Larivière, 1999 (biology, distribution, taxonomy).

Note. Additional information on distribution can be found in Larivière (1999).

Family DELPHACIDAE

Delphacid planthoppers

References. Muir, 1927 (revision, Samoa). Metcalf, 1943 (catalogue, world), 1946a (Guam, revision). Zimmerman, 1948 (Hawaii, revision). Fennah, 1950b (Fiji, revision), 1956 (Micronesia, revision), 1965 (Australia, New Zealand, revision), 1969 (New Caledonia, revision). Wise, 1977 (checklist, New Zealand). Deitz & Helmore, 1979 (identification, New Zealand). Donaldson, 1983 (Australia, taxonomy), 1988 (Australia, New Caledonia, taxonomy). Fletcher & Carver, 1991 (Australia, overview; under

Fulgoroidea). Fletcher & Larivière, 2001 (Australia, New Zealand; checklist, identification). Dijkstra *et al.*, 2003 (molecular phylogeny, world). Fletcher & Watson, 2003 (Australia, checklist; updated 2006). Larivière, 2005 (checklist, New Zealand).

Note. New Zealand Delphacidae are in great need of revision and probably the most poorly known fulgoroid group in this country.

Subfamily ASIRACINAE

References. Donaldson, 1983 (Australia, revision), 1988 (Australia, New Caledonia, taxonomy).

Tribe UGYOPINI

Genus *Ugyops* Guérin-Ménéville, 1834^N

Ugyops Guérin-Ménéville, 1834: 477. Type species: *Ugyops percheronii* Guérin-Ménéville, 1834, by monotypy.

Hygiops Amyot & Audinet-Serville, 1843: 511. Emendation for *Ugyops* Guérin-Ménéville, 1834. Synonymised by Agassiz, 1848: 1105.

Bidis Walker, 1857: 88. Type species: *Bidis notivena* Walker, 1857, by monotypy. Synonymised by Stål, 1866a: 175 (as *Hygyops* [*sic*]).

Geographic distribution. Australian Region (continental Australia, Lord Howe Island, Norfolk Island, New Zealand, South Pacific islands), Oriental Region.

References. Metcalf, 1943: 40–47 (catalogue, world). Fennah, 1965 (Australia, New Zealand, taxonomy). Wise, 1977: 69 (checklist, New Zealand). Deitz & Helmore, 1979 (identification, New Zealand). Dijkstra *et al.*, 2003 (molecular phylogeny).

Subgenus *Paracona* Fennah, 1965^E

Paracona Fennah, 1965: 11. Type species: *Ugyops (Paracona) pelorus* Fennah, 1965, by original designation.

Geographic distribution. New Zealand (main islands, KE).

References. Fennah, 1965 (taxonomy). Wise, 1977: 69 (checklist, New Zealand).

Ugyops (Paracona) pelorus Fennah, 1965^E

Type photograph p. 185.

Ugyops (Paracona) pelorus Fennah, 1965: 11. Holotype male (AMNZ); BP, Ohope Beach.

Geographic distribution (Map p. 218). North Island: AK, BP, CL, GB, ND, WI, WN. South Island: MC, SD. Offshore Islands: CH, KE, TH.

Biology. Lowland, coastal. Collected mostly on *Muehlenbeckia* (adults, nymphs), including *M. australis*; also on flowering *Metrosideros kermadecensis*, on *Hebe* (including *H. bollonsii*), *Phormium tenax*, *Cotula*, various coastal plants, and under *Mariscus* [= *Cyperus*]. [Hostplant: *Muehlenbeckia*.] Seasonality: October–March, June; mostly November–January. [Phloem-feeder.] Wing condition: Brachypterous.

References. Fennah, 1965 (biology, distribution, taxonomy). Wise, 1977: 69 (checklist, New Zealand).

Ugyops (Paracona) raouli (Muir, 1923)^E

Micromasoria raouli Muir, 1923a: 257. Syntypes (3)* (MONZ; series could not be located); KE, Raoul Island. *Ugyops (Paracona) raouli*: Fennah, 1965: 12.

Geographic distribution (Map p. 218). Offshore Islands: KE–Raoul Island.

Biology. Lowland, coastal. Collected from *Rhopalostylis sapida* fronds. Seasonality: Unknown. [Phloem-feeder.] Wing condition: Brachypterous.

References. Muir, 1923a (wing condition). Metcalf, 1943: 122 (catalogue, world; as *Micromasoria raouli*). Fennah, 1965 (biology, distribution, taxonomy). Wise, 1977: 69 (checklist, New Zealand).

Notes. According to Muir (1923a) this species was “described from one male, one female and a nymph from Raoul Island (Sunday Island), Kermadec Archipelago.” These specimens were said to be deposited in the Dominion Museum, Wellington [=MONZ], and to have been collected during the W.R.B. Oliver expedition to the Kermadecs in 1908 by Mr W.L. Wallace. Only two specimens from 1908 were found in MONZ, both of them females, and bearing the label information ‘cro.2.’, ‘Kermadec Is. 1908’, ‘M. raouli Muir’. Whether one of these two females is part of the syntype series used by Muir to describe *Micromasoria raouli* remains uncertain.

Subgenus *Ugyops* Guérin-Ménéville, 1834^N

See Genus above.

Ugyops (Ugyops) caelatus (White, 1879)^E

Cona caelata White, 1879: 218. Lectotype male (Perth Museum Scotland; designated by Fennah 1980: 76); “New Zealand”, type locality unknown.

Micromasoria caelata: Kirkaldy, 1909a: 29.

Livatis celata [*sic*]: Jacobi, 1928: 43.

Ugyops [(*Ugyops*)] *caelatus*: Fennah, 1965: 7.

Geographic distribution (Map p. 218). North Island: AK, BP, CL, ND, WI, WN. Offshore Islands: TH.

Biology. Lowland, often coastal. Collected on *Kunzea ericoides*, *Muehlenbeckia australis* (adults); *Coprosma rhamnoides*, *Knightia excelsa*, *Leptospermum* (nymphs); flowering prostrate *Metrosideros*, small-leaved *Muehlenbeckia* (adults, nymphs). [Hostplants: *Metrosideros*, *Muehlenbeckia*.] Seasonality: September–May, mostly January. [Phloem-feeder.] Wing condition: Brachypterous to macropterous.

References. Metcalf, 1943: 122 (catalogue, world; as *Micromasoria caelata*). Fennah, 1965 (biology, distribution, taxonomy). Wise, 1977: 69 (checklist, New Zealand).

***Ugyops (Ugyops) rhadamanthus* Fennah, 1965^E**

Type photograph p. 185.

Ugyops [(*Ugyops*)] *rhadamanthus* Fennah, 1965: 9. Holotype male (NZAC); AK, [Waitakere Ranges] Nihotupu.

Geographic distribution (Map p. 219). North Island: AK, BP, CL, ND, TO, WN.

Biology. Lowland (mostly), montane. Collected on *Dysoxylum spectabile*; also in forest remnant, in leaf litter. Seasonality: September, November–April; mostly January. [Phloem-feeder.] Wing condition: Brachypterous to macropterous.

References. Fennah, 1965 (biology, distribution, taxonomy). Wise, 1977: 69 (checklist, New Zealand).

Subfamily DELPHACINAE

Tribe DELPHACINI

Genus *Anchodelphax* Fennah, 1965^E

Anchodelphax Fennah, 1965: 34. Type species: *Anchodelphax olenus* Fennah, 1965, by original designation.

Geographic distribution. New Zealand.

References. Fennah, 1965 (revision). Wise, 1977: 70 (checklist, New Zealand). Deitz & Helmore, 1979 (identification).

***Anchodelphax hagnon* Fennah, 1965^E**

Type photograph p. 183.

Anchodelphax hagnon Fennah, 1965: 36. Holotype male (MONZ); WN, Titahi Bay.

Geographic distribution (Map p. 217). North Island: ND–Paihia (NZAC). WN–Titahi Bay (NZAC; Fennah, 1965). South Island: CO–Rocklands (NZAC).

Biology. [Lowland.] Collected on *Pimelea*, also on tussock and sown clover (*Trifolium*). Seasonality: November–February. [Phloem-feeder.] [Wing condition: Brachypterous.]

References. Fennah, 1965 (biology, distribution, taxonomy). Wise, 1977: 70 (checklist, New Zealand).

***Anchodelphax olenus* Fennah, 1965^E**

Type photograph p. 183.

Anchodelphax olenus Fennah, 1965: 35. Holotype male (NZAC); WI, Manawatu, Paiaka.

Geographic distribution (Map p. 217). North Island: AK–Auckland (Cornwallis (NZAC); Western Springs (Fennah, 1965)). ND–Poor Knights Islands, Tawhiti Rahi (NZAC). WI–Paiaka (NZAC). WN–Levin, Otaki River (Fennah, 1965). Wellington, Ngahuaranga Gorge [=Ngauranga Gorge] (Fennah, 1965). Offshore Islands: CH–Chatham Island (NZAC), North End Lagoon (NZAC). TH–South West Island (Fennah, 1965).

Biology. Lowland, coastal. Collected on *Muehlenbeckia australis* (in numbers), on *Convolvulus* and *Muehlenbeckia* (several adults and nymphs); also on *Juncus*, other rushes, *Lepidium oleraceum*. [Hostplant: *Muehlenbeckia*.] Seasonality: December–June. [Phloem-feeder.] Wing condition: Brachypterous.

References. Fennah, 1965 (biology, distribution, taxonomy). Wise, 1977: 70 (checklist, New Zealand).

Genus *Eorissa* Fennah, 1965^E

Eorissa Fennah, 1965: 28. Type species: *Eorissa cicatrifrons* Fennah, 1965, by original designation.

Geographic distribution. New Zealand.

References. Fennah, 1965 (taxonomy). Wise, 1977: 70 (checklist, New Zealand). Deitz & Helmore, 1979 (identification).

***Eorissa cicatrifrons* Fennah, 1965^E**

Type photograph p. 183.

Eorissa cicatrifrons Fennah, 1965: 30. Holotype male (NZAC); WN, Levin.

Geographic distribution (Map p. 217). North Island: ND–Paihia (NZAC). Puketi [State] Forest (NZAC). Waipoua [State] Forest (NZAC). WI–Paiaka (NZAC). WN–Levin (NZAC). South Island: CO–Beaumont, 2 km E (NZAC). MC–Banks Peninsula, Price’s Valley (NZAC). NN–Nelson, Saxon’s Road (NZAC).

Biology. [Lowland.] Collected on rushes and other grasses; also in undergrowth of *Agathis australis* forest (ND). Seasonality: January–April, mostly February. [Phloem-feeder.] Wing condition: Brachypterous (male).

References. Fennah, 1965 (biology, distribution, taxonomy, wing condition). Wise, 1977: 70 (checklist, New Zealand).

Note. This taxon is expected to be more widespread on the North Island than current records suggest.

Genus *Nilaparvata* Distant, 1906^N

Nilaparvata Distant, 1906b: 473. Type species: *Nilaparvata greeni* Distant, 1906b, by original designation.

Kalpa Distant, 1906b: 474. Type species: *Kalpa aculeata* Distant, 1906b, by original designation. Synonymised by Muir & Giffard, 1924: 16.

Geographic distribution. Australian Region, Ethiopian Region, Oriental Region, Palaearctic Region.

References. Metcalf, 1943: 294–298 (catalogue, world). Fennah, 1965 (Australia, New Zealand, taxonomy). Wise, 1977: 69 (checklist, New Zealand). Deitz & Helmore, 1979 (identification, New Zealand).

***Nilaparvata myersi* Muir, 1923^E**

Type photograph p. 183.

Nilaparvata myersi Muir, 1923b: 258. Holotype male (MONZ); WN, Tararua Range, Mount Alpha.

Geographic distribution (Map p. 217). North Island: AK, BP, CL, ND, RI, TO, WI, WN, WO. Offshore Islands: TH.

Biology. Lowland (mostly), montane. Mostly collected on *Scirpus* (e.g., *S. [=Bolboschoenus] fluviatilis*) and *Carex* in swampy areas in open or forested (e.g., *Dacrycarpus dacrydioides*) situations; also recorded among plant roots in silt in coastal bush. Seasonality: November–June. [Phloem-feeder.] Wing condition: Brachypterous (mainly) to macropterous.

References. Metcalf, 1943: 297 (catalogue, world). Fennah, 1965 (biology, distribution, taxonomy). Wise, 1977: 69 (checklist, New Zealand).

Genus *Notogryps* Fennah, 1965^E

Notogryps Fennah, 1965: 26. Type species: *Notogryps melanthus* Fennah, 1965, by original designation.

Geographic distribution. New Zealand.

References. Fennah, 1965 (revision). Wise, 1977: 69 (checklist, New Zealand). Deitz & Helmore, 1979 (identification).

***Notogryps ithoma* Fennah, 1965^E**

Type photograph p. 184.

Notogryps ithoma Fennah, 1965: 28. Holotype male (NZAC); ND, Mangonui.

Geographic distribution (Map p. 217). North Island: BP–Maunganui (NZAC). CL–Waikawau (NZAC). ND–Mangonui.

Biology. Lowland (coastal). Collected in *Avicennia* swamp (CL). Seasonality: March. [Phloem-feeder.] Wing condition: Brachypterous.

References. Fennah, 1965 (biology, New Zealand, taxonomy). Wise, 1977: 69 (checklist, New Zealand).

***Notogryps melanthus* Fennah, 1965^E**

Type photograph p. 184.

Notogryps melanthus Fennah, 1965: 26. Holotype male (NZAC); WA, Puketoi (Waewaepa [Range]).

Geographic distribution (Map p. 217). North Island: WA–Puketoi (Waewaepa).

Biology. Habitat: Unknown. Seasonality: March. [Phloem-feeder.] Wing condition: Brachypterous.

References. Fennah, 1965 (biology, distribution, taxonomy, wing condition). Wise, 1977: 69 (checklist, New Zealand).

Genus *Notohyus* Fennah, 1965^E

Notohyus Fennah, 1965: 22. Type species: *Notohyus erosus* Fennah, 1965, by original designation.

Geographic distribution. New Zealand.

References. Fennah, 1965 (taxonomy). Wise, 1977: 69 (checklist, New Zealand). Deitz & Helmore, 1979 (identification).

***Notohyus erosus* Fennah, 1965^E**

Type photograph p. 184.

Notohyus erosus Fennah, 1965: 23. Holotype female (NZAC); MC, Banks Peninsula, Tumbledown Bay.

Geographic distribution (Map p. 217). North Island: AK–Lynfield, Wattle Bay (NZAC). CL–Waikawau (NZAC). WI–Paiaka (NZAC). South Island: MC–Banks Peninsula, Tumbledown Bay.

Biology. Lowland (coastal). Collected in *Scirpus* swamp (AK) and in *Avicennia* swamp (CL). Seasonality: February–April. [Phloem-feeder.] Wing condition: Brachypterous (female).

References. Fennah, 1965 (biology, distribution, taxonomy, wing condition). Wise, 1977: 69 (checklist, New Zealand).

Genus *Opiconsiva* Distant, 1917^{N?}

Opiconsiva Distant, 1917: 301. Type species: *Opiconsiva fuscovaria* Distant, 1917, by original designation.

Corbulo Fennah, 1965: 48. Type species: *Delphax dilpa* Kirkaldy, 1907a, by original designation. Synonymised by Fennah, 1975b: 112.

Geographic distribution. Australian Region (continental Australia, New Zealand), Ethiopian Region.

References. Metcalf, 1943: 545 (catalogue, world). Fennah,

1965 (Australia, New Zealand, taxonomy; as *Corbulo*). Wise, 1977: 70 (checklist, New Zealand; as *Corbulo*). Deitz & Helmore, 1979 (identification, New Zealand; as *Corbulo*).

***Opiconsiva dilpa* (Kirkaldy, 1907)^{N?}**

Delphax dilpa Kirkaldy, 1907a: 162. Syntypes males* (BPBM); [Australia] New South Wales, Mittagong.

Delphacodes dilpa: Muir, 1917: 333.

Corbulo dilpa: Fennah, 1965: 48.

Opiconsiva dilpa: Asche, 1988: 198.

Geographic distribution (Map p. 217). North Island: AK–Auckland, Lynfield (NZAC). BP–Rotorua, Hannahs Bay (Fennah, 1965). ND–Poor Knights Islands, Tawhiti Rahi (NZAC). Waitangi Estate (Fennah, 1965). RI–Ruahine Range, Armstrong Saddle (NZAC). South Island: MC–Christchurch, near [New] Brighton (NZAC). SL–Hokonui Hills, [Mount] Hedgehope (NZAC). Longwood Range, Orepuke (NZAC). WD–Hokitika (1 km N; 17 km S) (NZAC). Offshore Islands: CH–Chatham Island (Awarakau, near; Awatotara; North End Lagoon) (NZAC). Extralimital range: Australia (continental).

Biology. Lowland to subalpine. Collected in grasslands, alpine meadows, paddocks, salt marshes, and near streams; on *Juncus*, rushes (at night), sedges, exotic grasses. Seasonality: November–March, mostly February. Phloem-feeder. Wing condition: Brachypterous (mainly) to macropterous.

References. Metcalf, 1943: 427 (catalogue, world; as *Delphacodes dilpa*). Fennah, 1965 (biology, distribution, taxonomy). Wise, 1977: 70 (checklist, New Zealand).

Note. There is one male specimen from Raoul Island (KE) in NZAC, which may belong to this species. The limits between this species and species from other areas, especially from the South Pacific, are however not sufficiently defined in the literature to be certain of this.

Genus *Sardia* Melichar, 1903^N

Sardia Melichar, 1903: 96. Type species: *Sardia rostrata* Melichar, 1903, by monotypy.

Geographic distribution. Australian Region (continental Australia, New Zealand (KE only), Fiji), Oriental Region.

References. Metcalf, 1943: 152–154 (catalogue, world). Fennah, 1965 (Australia, New Zealand, taxonomy). Wise, 1977: 70 (checklist, New Zealand). Deitz & Helmore, 1979 (identification, New Zealand).

Note. This genus was not recorded for New Zealand by Fennah (1965).

***Sardia rostrata pluto* (Kirkaldy, 1906)^N**

Hadeodelphax pluto Kirkaldy, 1906: 410. Syntypes* sex unknown (BPBM); Queenlands, Cairns.

Sardia pluto: Kirkaldy, 1908: 14.

Sardia rostrata: Muir, 1923a: 257.

Sardia rostrata pluto: Fennah, 1965: 44.

Geographic distribution (Map p. 219). Offshore Islands: KE (NZAC). Extralimital range: Australia (continental), Fiji.

Biology. [Lowland.] Habitat: Unknown. Seasonality: November. Phloem-feeder. Wing condition: Macropterous.

References. Metcalf, 1943: 153–154 (catalogue, world; see *S. pluto* & *S. rostrata*). Fennah, 1965 (Australia, biology, distribution, taxonomy). Wise, 1977: 70 (checklist, New Zealand).

Genus *Sulix* Fennah, 1965^E

Sulix Fennah, 1965: 49. Type species: *Sulix vetrano* Fennah, 1965, by original designation.

Geographic distribution. New Zealand.

References. Fennah, 1965 (revision). Wise, 1977: 70 (checklist, New Zealand). Deitz & Helmore, 1979 (identification).

***Sulix insecutor* Fennah, 1965^E**

Type photograph p. 184.

Sulix insecutor Fennah, 1965: 51. Holotype male (NZAC); WI, Paiaka (Man.) [=Manawatu].

Geographic distribution (Map p. 218). North Island: WI–Paiaka.

Biology. Habitat: Unknown. Seasonality: January. [Phloem-feeder.] Wing condition: Brachypterous.

References. Fennah, 1965 (biology, distribution, taxonomy, wing condition). Wise, 1977: 70 (checklist, New Zealand).

***Sulix miridialis* (Muir, 1917)^E**

Delphacodes miridialis Muir, 1917: 334. Holotype* male (BPBM); BP, Rotorua.

Sulix meridialis [sic]: Fennah, 1965: 50.

Geographic distribution (Map p. 218). North Island: AK, BP, ND, TK, TO, WI, WN. South Island: SD–Stephens Island (NZAC). Offshore Islands: TH.

Biology. Lowland (mostly), montane. Collected on and under *Poa anceps*, on various grasses, sedges and rushes, *Scirpus frondosus* [= *Desmoschoenus spiralis*] (in coastal sand dunes), *Lepidium oleraceum* (several adults and teneral, November, TH), *Carex* and shore vegetation, in

Scirpus swamp; also once on coastal vegetation of mainly *Leptospermum scoparium*. Seasonality: November–February, April, August. [Phloem-feeder.] Wing condition: Forewings submacropterous; hindwings vestigial.

References. Metcalf, 1943: 469 (catalogue, world; as *Delphacodes meridionalis*). Fennah, 1965 (biology, distribution, taxonomy; as *Sulix meridionalis*). Wise, 1977: 70 (checklist, New Zealand; as *Sulix meridionalis*).

Notes. NZAC has specimens from WD and SL with uncertain determinations, pending further taxonomic work on New Zealand delphacids. The original spelling by Muir (1917: 334) for the description of the new species is “*miridianalis*”, but Muir (1917: 312) used “*meridionalis*” in the caption for figure 24 in plate V. Fennah (1965) used the latter spelling without comment.

Sulix tasmani (Muir, 1923)^E

Type photograph p. 185.

Delphacodes tasmani Muir, 1923b: 258. Holotype male (MONZ); WN, Waikanae.

Sulix tasmani: Fennah, 1965: 52.

Geographic distribution (Map p. 218). North Island: AK, BP, CL, ND, WI, WN.

Biology. Lowland (mostly), montane. Collected on grasses, sedges, vegetation at bush margin, and small-leaved *Muehlenbeckia*; also in a paddock and once on *Pseudopanax*. Seasonality: November–February, July. [Phloem-feeder.] Wing condition: Forewings submacropterous; hindwings vestigial.

References. Metcalf, 1943: 519 (catalogue, world; as *Delphacodes tasmani*). Fennah, 1965 (biology, distribution, taxonomy). Wise, 1977: 70 (checklist, New Zealand).

Note. NZAC has specimens from TO, RI (North Island) and SD, NN, WD, DN (South Island) with uncertain determinations, pending further taxonomic work on New Zealand delphacids.

Sulix vetranio Fennah, 1965^E

Type photograph p. 185.

Sulix vetranio Fennah, 1965: 53. Holotype male (MONZ); WI, Foxton.

Geographic distribution (Map p. 218). North Island: WI–Foxton (MONZ, NZAC). WN–Lyall Bay (NZAC).

Biology. Lowland, coastal. Collected on *Scirpus frondosus* [= *Desmoschoenus spiralis*] in coastal sand dunes. Seasonality: January. [Phloem-feeder.] [Wing condition: Brachypterous.]

References. Fennah, 1965 (biology, distribution, taxonomy). Wise, 1977: 70 (checklist, New Zealand).

Genus *Toya* Distant, 1906^A

Toya Distant, 1906b: 472. Type species: *Toya attenuata* Distant, 1906b, by original designation.

Geographic distribution. Worldwide; New Zealand (adventive).

References. Metcalf, 1943: 388–389 (catalogue, world). Fennah, 1965 (Australia, New Zealand, taxonomy). Wise, 1977: 70 (checklist, New Zealand). Deitz & Helmore, 1979 (identification, New Zealand).

Toya dryope (Kirkaldy, 1907)^A

Delphax dryope Kirkaldy, 1907a: 154. Syntypes* (males, females) (BPBM); [Australia] Queensland, Cairns; Queensland, Redlynch; Queensland, Kuranda; Fiji, Rewa.

Delphacodes dryope: Muir, 1917: 333.

Toya dryope: Fennah, 1965: 56.

Geographic distribution (Map p. 218). North Island: GB–Gisborne (NZAC). HB–Napier estuary. ND–Paihia (NZAC). Waitangi Estate (Fennah, 1965). WA–Waewaepa Range (NZAC). First New Zealand record: ND, Waitangi Estate, 1951 (Fennah, 1965). Extralimital range: American Samoa, Australia (continental), Fiji, Samoa.

Biology. Lowland, coastal (mostly). Collected from a grape harvester (in large numbers, GB), in a paddock, and on grass in general. Seasonality: September, November, February–March. Phloem-feeder. Wing condition: Brachypterous to macropterous.

References. Metcalf, 1943: 433 (catalogue, world; as *Delphacodes dryope*). Fennah, 1965 (biology, distribution, taxonomy). Wise, 1977: 70 (checklist, New Zealand).

Note. NZAC has specimens from AK (North Island), MC, OL, CO, FD (South Island) and KE (Kermadec Islands) with uncertain determinations, pending further taxonomic work on New Zealand delphacids.

Family DERBIDAE

Derbid planthoppers

References. Muir, 1927 (revision, Samoa). Metcalf, 1945 (catalogue, world), 1946a (Guam, revision). Fennah, 1950b (Fiji, revision), 1956 (Micronesia, revision), 1969 (New Caledonia, revision). Wise, 1977 (checklist, New Zealand). Deitz & Helmore, 1979 (identification, New Zealand). Fletcher & Carver, 1991 (Australia, overview; under Fulgoroidea). Fletcher & Larivière, 2001 (Australia, New Zealand; checklist, identification). Fletcher & Watson, 2003 (Australia, checklist; updated 2006). Larivière, 2005 (checklist, New Zealand).

Subfamily CEDUSINAE

Tribe CEDUSINI

Genus *Eocenchrea* Muir, 1913^N

Eocenchrea Muir, 1913: 36. Type species: *Cenchrea maorica* Kirkaldy, 1909b, by original designation.

Gonyphlepsia Jacobi, 1928: 39. Type species: *Gonyphlepsia montistympani* Jacobi, 1928, by original designation. Synonymised by Muir, 1934: 565.

Geographic distribution. Australia (continental), New Caledonia, New Zealand.

References. Metcalf, 1945: 119–120 (catalogue, world). Wise, 1977: 71 (checklist, New Zealand). Deitz & Helmore, 1979 (identification, New Zealand).

Eocenchrea maorica (Kirkaldy, 1909)^E

Cenchrea maorica Kirkaldy, 1909b: 80. Holotype* female; New Zealand (BIBM).

Eocenchrea maorica: Muir, 1913: 37.

Geographic distribution (Map p. 219). North Island: AK, BP, CL, HB, ND, WA, WI, WN, WO.

Biology. Lowland, montane. Collected on undergrowth in *Agathis australis* forest, in shrublands-podocarp forest, under logs (adults); on *Astelia banksii* (teneral). Seasonality: October–April. [Possibly fungivore (nymph); phloem-feeder (adult).] Wing condition: Macropterous.

References. Metcalf, 1945: 120 (catalogue, world). Wise, 1977: 71 (checklist, New Zealand).

Family DICTYOPHARIDAE

Dictyopharid planthoppers

References. Metcalf, 1946b (catalogue, world). Fennah, 1956 (Micronesia, revision). Wise, 1977 (checklist, New Zealand). Deitz & Helmore, 1979 (identification, New Zealand). Fletcher & Carver, 1991 (Australia, overview; under Fulgoroidea). Fletcher & Larivière, 2001 (Australia, New Zealand; checklist, identification). Fletcher & Watson, 2003 (Australia, checklist; updated 2006). Larivière, 2005 (checklist, New Zealand).

Subfamily DICTYOPHARINAE

Tribe DICTYOPHARINI

Genus *Thanatodictya* Kirkaldy, 1906^N

Subgenus *Niculda* Kirkaldy, 1906^N

Niculda Kirkaldy, 1906: 392 (as subgenus of *Thanatodictya*).

Type species: *Thanatodictya (Niculda) anadyomene* Kirkaldy, 1906, by original designation.

Geographic distribution. Australian Region (Australia, New Zealand), Oriental Region.

References. Metcalf, 1946b: 82–86 (catalogue, world). Wise, 1977: 71 (checklist, New Zealand). Deitz & Helmore, 1979 (identification, New Zealand).

Thanatodictya (Niculda) tillyardi Myers, 1923^E

Type photograph p. 186.

Thanatodictya [Niculda] tillyardi Myers, 1923a: 428.

Holotype male (NZAC); NN, Dun Mountain.

Common name: Longheaded Bracken Hopper.

Geographic distribution (Map p. 219). North Island: AK, BP, CL, HB, ND, TO, WN. South Island: BR, CO, KA, MB, MK, NN, OL, SD.

Biology. Mostly lowland (often coastal), montane. Collected on ferns and grass (several adults and teneral); on bracken fern (*Pteridium esculentum*), fern-*Kunzea-Coprosma* associations, coastal *Ozothamnus*, general beach vegetation (including coastal dune grass), *Muehlenbeckia-Olearia-Coprosma* associations, *Phormium tenax*, sedge-*Paspalum* association; also on a tree fern trunk, and once on *Podocarpus nivalis* (at high altitude). [Hostplant: Ferns.] Seasonality: November–December, January–March (mostly), April. [Phloem-feeder.] Wing condition: Submacropterous to macropterous.

References. Metcalf, 1946b: 85–86 (catalogue, world). Wise, 1977: 71 (checklist, New Zealand). Deitz & Helmore, 1979 (biology).

Note. Although Myers (1923a) did not use the full combination *Thanatodictya (Niculda) tillyardi*, he indicated in the generic description that the vertex and stigma are characteristic of the subgenus *Niculda* Kirkaldy.

Family FLATIDAE

Flatid planthoppers

References. Zimmerman, 1948 (Hawaii, revision). Fennah, 1950b (Fiji, revision), 1956 (Micronesia, revision). Metcalf, 1957 (catalogue, world). Fennah, 1969 (New Caledonia, revision). Wise, 1977 (checklist, New Zealand). Deitz & Helmore, 1979 (identification, New Zealand). Medler, 1987 (Bishop Museum, types). Fletcher, 1988 (genera, Australia, review). Medler, 1989 (crop survey, New Guinea). Fletcher & Carver, 1991 (Australia, overview; under Fulgoroidea). Medler, 1999 (Indonesia, revision). Fletcher

& Larivière, 2001 (Australia, New Zealand; checklist, identification). Medler, 2001a (New Guinea and vicinity, taxonomy), 2001b (revision, Southern Africa). Fletcher & Watson, 2003 (Australia, checklist; updated 2006). Larivière, 2005 (checklist, New Zealand).

Subfamily FLATINAE

Tribe FLATINI

Genus *Anzora* Medler, 1986^A

Anzora Medler, 1986a: 206. Type species: *Massila unicolor* Walker, 1862, by original designation.

Geographic distribution. Australia (continental, Tasmania); New Zealand (adventive).

References. Wise, 1977: 71 (checklist, New Zealand; as *Sephena*). Deitz & Helmore, 1979 (identification, New Zealand; as *Sephena*). Fletcher, 1988 (Australia, taxonomy).

Anzora unicolor (Walker, 1862)^A

Massila unicolor Walker, 1862: 315. Holotype* male (F.P. Pascoe Collection); [Australia] Queensland, Moreton Bay. *Sephena cinerea* Kirkaldy, 1906: 457. Holotype* male (BPBM); Australia, New South Wales, Sydney. Synonymised by Medler, 1986a: 206.

Anzora unicolor: Medler, 1986a: 206.

Common name: Grey Planthopper.

Geographic distribution (Map p. 219). North Island: AK, BP, CL, GB, HB, ND, TO, WA, WI, WN, WO. South Island: MB, MC, NN. First New Zealand record: AK–‘Auckland Province’ (Myers, 1923a). Extralimital range: Australia (continental, Tasmania).

Biology. Mostly lowland (often coastal), montane. Collected on *Acacia armata* [= *A. paradoxa*], beach vegetation, *Berberis*, citrus foliage, *Cytisus*, in coastal scrub, on *Coriaria arborea*, in garden, on *Geniostoma*, grass, under bracken fern (*Pteridium esculentum*), on *Hebe stricta*, *Hoheria* flowers, *Lotus major*, *Magnolia*, in *Avicennia* swamp, on moss in forest, on *Muehlenbeckia*, *Muehlenbeckia-Olearia-Coprosma* associations, *Myoporum laetum*; in orchard with *Leptospermum*, on *Phormium tenax*, *Pteridium aquilinum* [= *P. esculentum*], rushes in tidal flat, tidewater monocots, and *Zea mays*. Seasonality: October, December, January–March (mostly), April–June. Phloem-feeder. Wing condition: Macropterous. Economic importance: Reported as a vector of fireblight, *Erwinia amylovora*, on apple and pear trees.

References. Myers, 1923a (economic importance; as *Sephena cinerea*). Metcalf, 1957: 367 (catalogue, world; as *Sephena cinerea*). Wise, 1977: 71 (checklist, New Zealand; as *Sephena cinerea*).

Tribe SIPHANTINI

Genus *Siphanta* Stål, 1862^A

Siphanta Stål, 1862c: 69. Type species: *Poeciloptera acuta* Walker, 1851a, designated by Melichar, 1902: 36.

Phalainesthes Kirkaldy, 1899: 359. Type species: *Phalainesthes schauinslandi* Kirkaldy, 1899, by original designation. Synonymised by Kirkaldy, 1902: 117.

Siphantoides Distant, 1910a: 305. Type species: *Siphantoides conspicua* Distant, 1910a, by original designation. Synonymised by Fletcher, 1985: 3.

Parasalurnis Distant, 1910a: 309. Type species: *Poeciloptera roseicincta* Walker, 1862, by original designation. Synonymised by Fletcher, 1985: 3.

Lombokia Distant, 1910b: 323. Type species: *Lombokia everetti* Distant, 1910b, by monotypy. Synonymised by Fletcher, 1985: 3.

Geographic distribution. Australian Region (continental Australia, Tasmania, Papua New Guinea, Torres Strait Islands), California (adventive), Hawaii (adventive), Indonesia, South Africa (adventive); New Zealand (adventive).

References. Metcalf, 1957: 231–240 (catalogue, world). Wise, 1977: 70 (checklist, New Zealand). Deitz & Helmore, 1979 (identification, New Zealand). Fletcher, 1985 (revision), 1988, 2002 (Australia, taxonomy).

Siphanta acuta (Walker, 1851)^A

Poeciloptera acuta Walker, 1851a: 448. Syntypes* sex undetermined (BMNH); “New Holland” [= Australia].

Poeciloptera cupido Walker, 1851a: 453. Holotype* male (BMNH); type locality unknown. Synonymised by Stål, 1862a: 489.

Siphanta acuta: Stål, 1862c: 69.

Cromna elegans Costa, 1864: 149. Type status and repository unknown; “Habitat in Australia?” (Costa, 1864). Synonymised by Melichar, 1902: 36.

Phalainesthes schauinslandi Kirkaldy, 1899: 359. Holotype* female (UMB); Hawaii, Hilo. Synonymised by Kirkaldy, 1902: 117.

Common names: Green Planthopper (Australia, New Zealand), Torpedo Bug (Hawaii).

Geographic distribution (Map p. 219). North Island: AK, BP, CL, GB, HB, ND, TK, WA, WI, WN, WO. South Island: BR, CO, MC, NN, WD. First New Zealand record: AK–Auckland (Kirkaldy, 1909a). Extralimital range: Australia (continental, Tasmania), California (adventive), Hawaii (adventive), South Africa (adventive).

Biology. Mostly lowland (often coastal), montane. Collected in broadleaf and mixed forests (e.g., *Beilschmiedia tarairi* forest, *Vitex lucens-Rhopalostylis sapida* forest), in more open environments, including coastal and montane habitats, as well as in gardens; on a wide range of native and

introduced plants (e.g., *Clianthus*, *Coprosma-Myrsine* associations, *Coprosma repens*, *Coriaria*, *Citrus limon*, *Dahlia*, *Gardenia*, *Helianthus*, *Leptospermum scoparium*, *Metrosideros* (including *M. excelsa*), moss from rocks (at high altitude), *Muehlenbeckia-Olearia-Coprosma* associations, *Musa*, *Pittosporum eugenioides*, *Podocarpus totara*, *Rubus idaeus*, *R. ursinus*, *Salicornia*-weeds-grasses (at night), *Solanum aviculare*, *Spiraea japonica*, *S. ulmaria*, tidewater monocots (adults)); also found on *Tabebuia* (adults, nymphs) and on *Cornus capitata* (eggs). Hostplants: *Coprosma*, citrus trees, various ornamental shrubs (New Zealand); a wide range of native and exotic plants (Australia). Seasonality: all months of the year, mostly December–April. Phloem-feeder. Wing condition: Macropterous.

References. Myers, 1922b (biology, taxonomy, New Zealand). Metcalf, 1957: 233–236 (catalogue, world). Wise, 1977: 71 (checklist, New Zealand). Fletcher, 1979a (Australia, biology).

Family RICANIIDAE

Ricaniid planthoppers

References. Muir, 1927 (revision, Samoa). Fennah, 1950b (Fiji, revision). Metcalf, 1955b (catalogue, world). Fennah, 1956 (Micronesia, revision). Wise, 1977 (checklist, New Zealand). Deitz & Helmore, 1979 (identification, New Zealand). Fletcher & Carver, 1991 (Australia, overview; under Fulgoroidea). Fletcher & Larivière, 2001 (Australia, New Zealand; checklist, identification). Fletcher & Watson, 2003 (Australia, catalogue; updated 2006). Larivière, 2005 (checklist, New Zealand).

Genus *Scolypopa* Stål, 1859^A

Scolypopa Stål, 1859b: 325. Type species: *Pochazia australis* Walker, 1851a, designated by Jacobi, 1916: 306.
Dechitus Walker, 1862: 311. Type species: *Dechitus aphrophoroides* Walker, 1862, designated by Metcalf, 1955b: 165. Synonymised by Metcalf, 1955b: 165.

Geographic distribution. Australia (continental, Tasmania, Lord Howe Island, Norfolk Island), New Caledonia, Oriental Region; New Zealand (adventive).

References. Metcalf, 1955b: 165–170 (catalogue, world). Wise, 1977: 70 (checklist, New Zealand). Deitz & Helmore, 1979 (identification, New Zealand).

Scolypopa australis (Walker, 1851)^A

Pochazia australis Walker, 1851a: 430. Syntypes* sex undetermined (BMNH); “New Holland” [=Australia].

Flatoides australis Walker, 1858a: 102. Syntypes* sex undetermined (BMNH); [Australia] Queensland. Synonymised by Melichar 1898: 278.

Scolypopa urbana Stål, 1859b: 325. Syntypes* sex undetermined (NHRM); [Australia] New South Wales. Synonymised by Melichar 1898: 278.

Ricania australis: Distant, 1878: 39.

Scolypopa australis: Melichar, 1898: 278.

Common name: Passionvine Hopper.

Geographic distribution (Map p. 221). North Island: AK, BP, CL, GB, HB, ND, RI, TK, WI, WN, WO. South Island: MB, NN. Stewart Island: Mount Rakeahua (NZAC). First New Zealand record: New Zealand (Distant, 1878). Extralimital range: Australia (continental, Tasmania, Lord Howe Island, Norfolk Island).

Biology. Lowland, mostly coastal. Lives on a wide variety of native and exotic plants in a wide range of habitats, including urban gardens, shrublands, and forest areas. Seasonality: Throughout most of the year, especially February–March. Phloem-feeder. Wing condition: Macropterous. Economic importance: Pest of passion vines and kiwifruit vines on which it builds up into huge populations causing heavy deposits of ‘honeydew’ leading to the growth of sooty moulds which impairs the marketability of the fruit; also attacks a variety of native plants; occasionally involved in the production of poisonous honey which may occur if bees collect honeydew excreted by *Scolypopa australis* feeding on the endemic tree *Coriaria arborea*.

References. Palmer-Jones *et al.*, 1947 (biology, economic importance, New Zealand). Metcalf, 1955b: 167–169 (catalogue, world). Cumber, 1966, 1967 (biology, economic importance, New Zealand). Wise, 1977: 70 (checklist, New Zealand). Deitz & Helmore, 1979 (biology, New Zealand). Fletcher, 1979b (morphology). Hill & Steven, 1989 (biology, economic importance, New Zealand).

Notes. This taxon has generally been assumed to be a native of Australia, from where it could have been introduced more than once as eggs on plant materials. Records of this species from Fiji are most probably wrong (Fennah, 1950b).

The outlying distribution record from Stewart Island is based on a single NZAC specimen from a bulk litter sample (“68/51 Mt. Rakeahua, Stewart Id. 2000’ 14.ii.68. G Kuschel. Unsifted dead leaves of *Olearia colensoi* from sheltered side of rocks”) which would have been processed in Nelson, and may be the result of cross sample contamination (T. K. Crosby, personal communication).

BIBLIOGRAPHY

An asterisk (*) before a reference indicates that it is not referred to in the text.

- Agassiz, J. L. R. 1848: *Nomenclatoris zoologici. Index universalis, continens nomina systematica classium, ordinum, familiarum et generum animalium omnium, tam viventium quam fossilium, secundum ordinem alphabeticum unicum disposita, adjectis homonymiis plantarum*. Sumtibus et typis Jent et Gassmann, Soloduri. 1135 pp.
- Alfken, J. D. 1904: Beitrag zur Insectenfauna der hawaiischen und neuseeländisch Inseln (Ergebnisse einer Reise nach dem Pacific) Schauinsland 1896-97. *Zoologische Jahrbücher. Abteilung für Systematik, Ökologie, Geographie und Biologie der Tiere* 19: 561–628.
- Amyot, C. J. B.; Audinet-Serville, J.-G. 1843: Deuxième partie. Homoptères. Homoptera Latr. *Histoire naturelle des insectes. Hémiptères*. In: Suites à Buffon. Paris: Fain and Thunot. 676 pp.
- Andrews, J. R. H. 1986: The Southern Ark. Zoological discovery in New Zealand 1769–1900. Century Hutchinson New Zealand Ltd, New Zealand, Auckland [Glenfield North Shore]. 237 pp.
- *Anonymous, 1983: When to listen for the first cicada songs in the Miranda area. *Miranda Naturalists' Trust Records, August 1983*: 3.
- Archibald, R. D.; Cox, J. M.; Deitz, L. L. 1979: New records of plant pests in New Zealand. 3. Six species of Homoptera. *New Zealand Journal of Agricultural Research* 22: 201–207.
- Arensburger, P.; Buckley, T. R.; Simon, C. 2004a: Biogeography and phylogeny of the New Zealand cicada genera (Hemiptera: Cicadidae) based on nuclear and mitochondrial DNA data. *Journal of Biogeography* 31: 1–13.
- ; Simon, C.; Holsinger, K. 2004b: Evolution and phylogeny of the New Zealand cicada genus *Kikihia* Dugdale (Homoptera: Auchenorrhyncha: Cicadidae) with special reference to the origin of the Kermadec and Norfolk Islands' species. *Journal of Biogeography* 31: 1769–1783.
- *Asche, M. 1985: Zur Phylogenie der Delphacidae Leach, 1815 (Homoptera Cicadina Fulgoromorpha). *Marburger Entomologische Publikationen* 2: 1–910.
- 1988: Delphacidae from Côte d'Ivoire. *Revue française d'Entomologie [Nouvelle Série]* 10(2): 151–231.
- Ashcroft, T.; George, S. 2004: New to New Zealand: *Bathyllus albicinctus* (Hemiptera: Aphrophoridae) Whangarei. *Ministry of Agriculture and Forestry, Initial Investigation & Technical Report/Entomology-2004-049-261*: 1–7.
- *Baker, C. F. 1903: On the *Gnathodus* species of the *abdominalis* group. *Invertebrata Pacifica* 1: 1–2.
- 1925: Nomenclatorial notes on the Jassoidea IV. *Philippine Journal of Science* 27: 537.
- Ball, E. D. 1929: A supplemental revision of the genus *Athysanus* in North America (Homoptera: Cicadellidae). *Transactions of the American Entomological Society* 55: 1–8.
- Beirne, B. P. 1952: The Nearctic species of *Macrosteles* (Homoptera: Cicadellidae). *Canadian Entomologist* 84: 208–232.
- Blocker, H. D. 1967: Classification of the Western Hemisphere *Balclutha* (Homoptera : Cicadellidae). *Proceedings of the United States National Museum* 122: 1–55.
- *——— 1996: Origin and Radiation of the Auchenorrhyncha. Pp. 46–64. In: Schaefer, C. E (ed.) *Studies on Hemipteran Phylogeny*. Lanham: Entomological Society of America (Thomas Say Publications).
- Boisduval, J. B. A. D. de 1835: Voyage de découvertes de l'Astrolabe exécuté par ordre du roi, pendant les années 1826–1827, 1828–1829, sous le commandement de M. J. Dumont d'Urville. Faune entomologique de l'océan pacifique avec l'illustration des insectes nouveaux recueillis pendant le voyage. Deuxième partie: coléoptères et autres ordres. Tastu, Paris VII + 716 pp.
- Boulard, M. 1988: Taxonomie et nomenclature supérieures des Cicadoidea. Histoire problèmes et solutions. *Biologie et Évolution des Insectes* 1: 1–89.
- 1998: Nomenclature et taxonomie supérieures des Cicadoidea ou vraies cigales: histoire, problèmes et solutions (Rhynchota Homoptera Cicadomorpha). *Biologie et Évolution des Insectes* 10: 79–129.
- Bourgoin, T. 2008: FLOW: Fulgoromorpha Lists On the Web, 1997–2008. Version 7, 23.X.2008. <http://flow.snv.jussieu.fr/cgi-bin/flowsite.pl> Web, 1997–2008. Version 7, 23.X.2008. <http://flow.snv.jussieu.fr/cgi-bin/flowsite.pl>
- ; Campbell, B.C. 2002: Inferring a phylogeny for Hemiptera: Falling into the 'Autapomorphic trap'. In: Holzinger, W.E. (ed.): Zikaden. Leafhoppers, planthoppers and cicadas (Insecta: Hemiptera: Auchenorrhyncha). *Denisia* 4: 67–82.

- Broomfield, P. S. 1971: A catalogue of the membracid types (Homoptera: Membracidae) in the British Museum (Natural History). *Bulletin of the British Museum (Natural History), Entomology* 25: 327–386.
- *Brown, R. W. 1985: Composition of scientific words. Smithsonian Institution Press, Washington, D.C. 882 pp.
- Brownsey, P. J.; Smith-Dodsworth, J. C. 2000: New Zealand ferns and allied plants. Revised edition. David Bateman Ltd, Auckland. 168 pp.
- Buckley, T. R.; Arensburger, P.; Simon, C.; Chambers, G.K. 2002: Combined data Bayesian phylogenetics, and the origin of New Zealand cicada genera. *Systematic Biology* 51: 4–18.
- ; Cordeiro, M.; Marshall, D. C.; Simon, C. 2006: Differentiating between hypotheses of lineage sorting and introgression in New Zealand alpine cicadas (*Maoricicada* Dugdale). *Systematic Biology* 51: 4–18.
- ; Simon, C. 2007: Evolutionary radiation of the cicada genus *Maoricicada* Dugdale (Hemiptera: Cicadoidea) and the origins of the New Zealand alpine biota. *Biological Journal of the Linnean Society* 91: 419–435.
- ; ———; Chambers, G. K. 2001a: Phylogeography of the New Zealand cicada *Maoricicada campbelli* based on mitochondrial DNA sequences: ancient clades associated with Cenozoic environmental change. *Evolution* 55: 1395–1407.
- *———; ———; ——— 2001b: Exploring among-site rate variation models in a maximum likelihood framework using empirical data: effects of model assumptions on estimates of topology, branch lengths, and bootstrap support. *Systematic Biology* 50: 67–86.
- ; ———; Shimodaira, H.; Chambers, G. K. 2001c: Evaluating hypotheses on the origin and evolution of the New Zealand alpine cicadas (*Maoricicada*) using multiple-comparison tests of tree topology. *Molecular Biology and Evolution* 18: 223–234.
- *Bull, P. C. 1959: Stomach contents of a North Island kiwi (*Apteryx australis mantelli*) from the Raetihi district. *Notornis* 8: 143–145.
- *Burmeister, H. C. C. 1835–1845: Schnabelkerfe. Rhynchota. *Handbuch der Entomologie* 2(1): 1–396.
- 1838: Rhynchota. No. 1. *Genera Insectorum iconibus illustravit et descripsit* 1: Plates 10, 11, 17, 20.
- *Burns, A. N. 1957: Checklist of Australian Cicadidae. *Entomologischen Arbeiten* 8(2): 609–678.
- Butler, A. G. 1874: Insects of New Zealand. In: Richardson, J.; Gray, J. E. (eds), *The Zoology of the voyage of H.M.S. Erebus and Terror*, vol. 2(4), pp. 25–51. E.W. Janson, London.
- 1877: Hemiptera-Homoptera. In Dr Albert Gunther's Zoological Collections made by H.M.S. "Peterel". *Proceedings of the Zoological Society of London* 1877: 90–91.
- Campbell, B. C.; Steffen-Campbell, J. D.; Sorenson, J. T.; Gill, R. J. 1995: Paraphyly of Homoptera and Auchenorrhyncha inferred from 18S rDNA nucleotide sequences. *Systematic Entomology* 20: 175–194.
- *Campbell, D. J.; Moller, H.; Ramsay, G. W.; Watt, J. C. 1984: Observations on food of kiore (*Rattus exulans*) found in husking stations on northern offshore islands of New Zealand. *New Zealand Journal of Ecology* 7: 131–138.
- *Carroll, A. L. K. 1968: Foods of the harrier. *Notornis* 15(1): 23–28.
- *Carver, M.; Gross, G. F.; Woodward, T. E. 1991: Hemiptera (Bugs, leafhoppers, cicadas, aphids, scale insects, etc.), Pp. 429–509 In: Division of Entomology, CSIRO, *The Insects of Australia*, 2nd edition. Melbourne University Press, Carlton. 2 vols, xviii + 1139 pp.
- Ceotto, P.; Bourgoin, T. 2008: Insights into the phylogenetic relationships within Cixiidae (Hemiptera: Fulgoromorpha): cladistic analysis of a morphological dataset. *Systematic Entomology* 33(3): 484–500.
- Charles, J. G. 1989: *Edwardsiana crataegi* (Douglas) (= *Typhlocyba froggatti* Baker), Froggatt's apple leafhopper (Homoptera: Cicadellidae). Pp. 183–186. In: Cameron, P. J.; Hill, R. L.; Bain, J.; Thomas, W. P. (eds). *A Review of Biological Control of Invertebrate Pests and Weeds in New Zealand 1874 to 1987*. CAB International Institute of Biological Control, Technical Communication No. 10.
- *——— 1996: Leafhopper insecticide resistance management strategy. Pp. 163–167. In: Bourdot, G. W.; Suckling, D. M. (eds). *Pesticide Resistance: Prevention and Management*. New Zealand Plant Protection Society, Lincoln, New Zealand.
- 2004: Leafhopper insecticide resistance management strategy. *Pesticide Resistance Strategies: New Zealand Plant Protection Society*. Viewed June 2009. <http://www.nzpps.org/resistance/leafhopper.php>
- *———; Walker, J. T. S.; White, V. 1994: Resistance in Froggatt's apple leafhopper, *Edwardsiana crataegi*

- Douglas to azinphos-methyl. *Proceedings of the 47th New Zealand Plant Protection Conference*: 333–336.
- China, W. E. 1952: A new genus and species of Aphrophorinae (Cercopidae, Hemiptera-Homoptera) from Australia. *Annals and Magazine of Natural History* (12)5: 789–792.
- *Cockayne, A. H. 1919: Annual report. *Report of the New Zealand Department of Agriculture 1918–1919*: 42.
- *Colbourne, R.; Powlesland, R. G. 1988: Diet of the Stewart Island brown kiwi (*Apteryx australis* Lawry) at Scollay's Flat, southern Stewart Island. *New Zealand Journal of Ecology* 11: 99–104.
- Collyer, E.; van Geldermalsen, M. 1975: Integrated control of apple pests in New Zealand I. Outline of experiment and general results. *New Zealand Journal of Zoology* 2: 101–134.
- Cookson, L.; New, T. R. 1980: Observations on the biology of *Sextius virescens* (Fairmaire) (Homoptera, Membracidae) on *Acacia* in Victoria. *Australian Entomological Magazine* 7(1): 4–10.
- Costa, A. 1864: Descrizione de taluni insetti stranieri all'Europa. *Annuario del Museo Zoologico della R. Università di Napoli* 2: 139–151.
- Cottier, W. 1956: Insect pests. Pp. 211–411. In: Plant protection in New Zealand. Government Printer, Wellington, New Zealand. 699 pp.
- *Cowan, P. E. 1987: Invertebrates in the diet of brushtail possums, *Trichosurus vulpecula*, in lowland podocarp/broadleaf forest, Orongorongo Valley, Wellington, New Zealand. *New Zealand Journal of Zoology* 14(2): 163–177.
- *———; Moeed, A. 1985: Invertebrates in the diet of brushtail possums (*Trichosurus vulpecula*) in lowland forest, Orongorongo Valley. *New Zealand Journal of Ecology* 8: 153.
- Crosby, T. K.; Dugdale, J. S.; Watt, J. C. 1976: Recording specimen localities in New Zealand: an arbitrary system of areas and codes defined. *New Zealand Journal of Zoology* 3: 69 (with separate map overleaf).
- ; ———; ———. 1998: Area codes for recording specimen localities in the New Zealand subregion. *New Zealand Journal of Zoology* 25: 175–183.
- Cryan, J. R. 2005: Molecular phylogeny of Cicadomorpha (Insecta: Hemiptera: Cicadoidea, Cercopoidea and Membracoidea): adding evidence to the controversy. *Systematic Entomology*, 30: 563–574.
- Cumber, R. A. 1952a: A new species of *Erythroneura* (Typhlocybinae, Hem.-Hom.) from *Arundo conspicua* Forst. (toetoe). *Transactions of the Royal Society of New Zealand* 79: 525–527.
- 1952b: Entomological aspects of Yellow-Leaf Disease of *Phormium*. *New Zealand Science Review* 10: 3–4.
- 1952c: Studies on *Oliarus atkinsoni* Myers (Hem.: Cixiidae), vector of the “Yellow-Leaf” Disease of *Phormium tenax* Forst. I. – Habits and environment, with a note on natural enemies. *New Zealand Journal of Science and Technology, Section B*, 34: 92–98.
- 1952d: Studies on *Oliarus atkinsoni* Myers (Hem.: Cixiidae), vector of the “Yellow-Leaf” Disease of *Phormium tenax* Forst. II. – The nymphal instars and seasonal changes in the composition of nymphal populations. *New Zealand Journal of Science and Technology, Section B*, 34: 160–165.
- *——— 1952e: Notes on the biology of *Melampsalta cruentata* Fabricius (Hemiptera – Heteroptera: Cicadidae), with special reference to the nymphal stages. *Transactions of the Royal Entomological Society of London* 103: 219–238.
- 1953a: The New Zealand species of *Oliarus* (Hem.: Cixiidae). *Transactions of the Royal Society of New Zealand* 81: 71–72.
- 1953b: Studies on *Oliarus atkinsoni* Myers (Hem.: Cixiidae), vector of the “Yellow-Leaf” Disease of *Phormium tenax* Forst. III. – Resistance of nymphal forms to submergence-control by inundation. *New Zealand Journal of Science and Technology, Section B*, 34: 260–266.
- 1953c: Investigations into the Yellow-Leaf Disease of *Phormium*. IV. – Experimental induction of Yellow-Leaf condition in *Phormium tenax* Forst. by the insect vector *Oliarus atkinsoni* Myers (Hem., Cixiidae). *New Zealand Journal of Science and Technology, Section A*, 34: 31–40.
- 1953d: Die-back condition of *Phormium* seedlings used in Yellow-Leaf investigations. *New Zealand Journal of Science and Technologies, Section A*, 35: 270–272.
- 1954a: Search for alternative vectors of the Yellow-Leaf disease of *Phormium*. *New Zealand Journal of Science and Technology, Section A*, 36: 32–37.
- 1954b: Studies on *Oliarus atkinsoni* Myers (Hemiptera: Cixiidae), vector of the “Yellow-Leaf” Disease of *Phormium tenax* Forst. IV. – Disease-vector relationships. *New Zealand Journal of Science and Technology, Section A*, 35: 530–549.
- 1954c: Injury to *Phormium* caused by insects, mites, and molluscs. *New Zealand Journal of Science and Technology, Section A*, 36: 60–74.

- Cumber, R. A. 1966: Factors influencing population levels of *Scolypopa australis* Walker (Hemiptera-Homoptera: Ricaniidae) in New Zealand. *New Zealand Journal of Science* 9(2): 336–356.
- 1967: Factors influencing egg survival of *Scolypopa australis* Walker (Hemiptera-Homoptera: Ricaniidae) in New Zealand. *New Zealand Journal of Science* 10(3): 639–643.
- *Cunningham, G. H. 1921: The genus *Cordyceps* in New Zealand. With special entomological notes on hosts, by J.G. Myers. *Transactions and Proceedings of the New Zealand Institute* 53: 37–382.
- Curtis, J. 1829: Homoptera. A guide to the arrangement of British Insects, being a catalogue of all named insects hitherto discovered in Great Britain and Ireland. 1829: 1–256.
- 1833: Characters of some undescribed genera and species indicated in the “Guide to an arrangement of British Insects”. *Entomological Magazine (London)* 1: 186–199.
- 1837: *Eupteryx*. *British Entomology* 14: plate 640.
- *Cwikla, P. S. 1985: Classification of the genus *Xestocephalus* (Homoptera: Cicadellidae) for North and Central America including the West Indies. *Brenesia* 24: 175–272.
- *Daniel, M. J. 1979: The New Zealand short-tailed bat, *Mystacina tuberculata*; a review of present knowledge. *New Zealand Journal of Zoology* 6(2): 357–370.
- Dash, P. C.; Viraktamath, C. A. 1998: A review of the Indian and Nepalese grass feeding leafhopper genus *Deltocephalus* (Homoptera: Cicadellidae) with description of new species. *Hexapoda* 10: 1–59.
- Davidson, R. H.; DeLong, D. M. 1935: A review of the North American species of *Balclutha* and *Agellus* (Homoptera: Cicadellidae). *Proceedings of the Entomological Society of Washington* 37: 97–112.
- Day, M. F. 1999: The genera of Australian Membracidae (Hemiptera: Auchenorrhyncha). *Invertebrate Taxonomy* 13(4): 629–747.
- ; Fletcher, M. J. 1994: An Annotated Catalogue of the Australian Cicadelloidea (Hemiptera: Auchenorrhyncha). *Invertebrate Taxonomy* 8: 1117–1288.
- *Deitz, L. L. 1979: Selected references for identifying New Zealand Hemiptera (Homoptera and Heteroptera), with notes on nomenclature. *New Zealand Entomologist* 7(1): 20–29.
- 1981: Passionvine hopper, *Scolypopa australis* (Walker), life cycle in New Zealand. *New Zealand Department of Scientific and Industrial Research Information Series* 105(35): 1–3.
- *——— 1989: Bibliography of Membracoidea (Homoptera: Aetalionidae, Biturritiidae, Membracidae, and Nicomiidae) 1981–1987. *North Carolina Agricultural Research Service Technical Bulletin* 290: 1–31.
- ; Dietrich, C. H. 1993: Superfamily Membracoidea (Homoptera: Auchenorrhyncha). I. Introduction and revised classification with new family-group taxa. *Systematic Entomology* 18(4): 287–296.
- ; Helmore, D. W. 1979: Illustrated key to the families and genera of planthoppers (Homoptera: Fulgoroidea) from the New Zealand sub-region. *New Zealand Entomologist* 7(1): 11–19.
- *———; Kopp, D. D. 1987: Bibliography of the Membracoidea (Homoptera: Aetalionidae, Biturritiidae, Membracidae, and Nicomiidae). 1956–1980. *North Carolina Agricultural Research Service Technical Bulletin* 281: 1–39.
- DeLong, D. M. 1931: A revision of the American species of *Empoasca* known to occur north of Mexico. *United States Department of Agriculture Technical Bulletin* 231: 1–59.
- *———; Davidson, R. H. 1933: The genus *Agellus*, gen. nov. (Homoptera, Cicadellidae). *Ohio Journal of Science* 23(3): 210.
- *Dhilepan, K.; Croft, B. J.; Ridley, A. W.; James, A. P.; Raghu, S. 2006: Susceptibility of source plants to Sugarcane Fiji disease virus influences the acquisition and transmission of the virus by the planthopper vector *Perkinsiella saccharicida*. *Journal of Applied Entomology* 130(1): 67–71.
- Dietrich, C. H. 2000: Guide to the Subfamilies of Leafhoppers (Cicadellidae). <http://www.inhs.uiuc.edu/~dietrich/subfam/guide.html>
- 2002: Evolution of Cicadomorpha (Insecta, Hemiptera). In: Holzinger, W. E. (ed.): Zikaden. Leafhoppers, planthoppers and cicadas (Insecta: Hemiptera: Auchenorrhyncha). *Denisia* 4: 155–170.
- 2005: Keys to the Families of Cicadomorpha and Subfamilies and Tribes of Cicadellidae (Hemiptera: Auchenorrhyncha) *Florida Entomologist* 88(4): 502–517.
- 2006 (and updates): Annotated bibliography of literature useful for identification of leafhoppers and related Cicadomorpha. <http://www.inhs.uiuc.edu/~dietrich/LHBibliog.html>
- ; Deitz, L. L. 1993: Superfamily Membracoidea (Homoptera: Auchenorrhyncha). II. Cladistic analysis and conclusions. *Systematic Entomology* 18(4): 297–311.
- ; Dmitriev, D. A. 2006: Review of the New World genera of the leafhopper tribe Erythroneurini (Hemiptera: Cicadellidae: Typhlocybinae). *Illinois Natural History Survey Bulletin* 37: 119–190.

- Dietrich, C. H.; McKamey, S. H.; Deitz, L. L. 2001a: Morphology-based phylogeny of the treehopper family Membracidae (Hemiptera: Cicadomorpha; Membracoidea). *Systematic Entomology* 26: 213–239.
- ; Rakitov, R. A.; Homes, J.; Black, W. C. 2001b: Phylogeny of the major lineages of Membracoidea (Insecta: Hemiptera: Cicadomorpha) based on 28S rDNA sequences. *Molecular Phylogenetics and Evolution* 18: 293–305.
- Dijkstra, E.; Rubio, J. M.; Post, R. J. 2003: Resolving relationships over a wide taxonomic range in Delphacidae (Homoptera) using COI gene. *Systematic Entomology* 28(1): 89–100.
- Distant, W. L. 1878: [*Ricana australis* from New Zealand.] *Transactions of the Royal Entomological Society of London*, 1878: 39.
- 1892: On some undescribed Cicadidae with synonymical notes. *Annals and Magazine of Natural History* (6)9: 313–327.
- 1906a: “A Synonymic Catalogue of Homoptera: Pt I. Cicadidae”. Printed by order of the trustees of the British Museum, London. 270 pp.
- 1906b: Rhynchota. Hemiptera-Homoptera. *Fauna of British India including Ceylon and Burma* 3: 1–503.
- 1908: Rhynchota – Homoptera. *The Fauna of British India including Ceylon and Burma* 4: 1–501.
- 1910a: Rhynchotal notes 1. *Annals and Magazine of Natural History* (8)5: 297–322.
- 1910b: Rhynchota Malayana. Part III. *Records of the Indian Museum (Calcutta)* 5: 313–338.
- 1914: Homoptera (Membracidae and Jassidae) collected in the Lagos district by W.A. Lamborn. *Transactions of the Entomological Society of London* 1914: 515–520.
- 1917: Rhynchota. Part II: Suborder Homoptera. The Percy Sladen Trust Expeditions to the Indian Ocean in 1905, under the leadership of Mr. J. Stanley Gardiner M.A. *Transactions of the Linnean Society of London. Zoology* 17: 273–322.
- 1918: Rhynchota, Homoptera: Appendix. Heteroptera: Addenda. *The Fauna of British India, including Ceylon and Burma* 7: 1–210.
- *——— 1920: Rhynchota from New Caledonia. Part II. Homoptera. *Annals and Magazine of Natural History* (6)9: 456–470.
- Dlabola, J. 1958: A reclassification of Palaearctic Typhlocybinæ (Homopt., Auchenorrh.). *Casopis. Československé Společnosti Entomologické* 55: 44–57.
- *Dmitriev, D. A. 2002: General morphology of leafhopper nymphs of the subfamily Deltocephalinae (Hemiptera: Cicadellidae). *Acta Entomologica Slovenica* 10: 65–82.
- *——— 2004: Larvae of Leafhoppers of the Subfamily Deltocephalinae (Homoptera, Cicadellidae) from European Russia and Adjacent Territories: III. Tribes Deltocephalini, Stirellini, and Paralimnini. *Entomological Review* 84(1): 31–53. [Translated from *Entomologicheskoe Obozrenie* 83(1): 87–114.]
- Dolling, W. R. 1991: The Hemiptera. Oxford University Press, Oxford. 273 pp.
- Donaldson, J. F. 1983: Revision of the Australian Asiracinae (Homoptera: Fulgoroidea: Delphacidae). *Journal of the Australian Entomological Society* 22: 277–285.
- 1988: Further studies on Asiracinae (Homoptera: Delphacidae) in Australia and New Caledonia. *Journal of the Australian Entomological Society* 27: 133–141.
- Douglas, J. W. 1876: British Hemiptera-Homoptera – additional species. *Entomologist's Monthly Magazine* 12: 203–204.
- *Douglas, M. J. W. 1970: Foods of harriers in a high country habitat. *Notornis* 17(2): 92–95.
- Duffels, J. P. 1986: Biogeography of Indo-pacific Cicadoidea: a tentative recognition of areas of endemism. *Cladistics* 2: 318–336.
- ; Van der Laan, P. A. 1985: Catalogue of the Cicadoidea (Homoptera, Auchenorrhyncha) 1956–1980. Junk, Dordrecht, Netherlands. *Series Entomologica* 34: 414 pp.
- Dugdale, J. S. 1972: Genera of New Zealand Cicadidae (Homoptera). *New Zealand Journal of Science* 14(4), 1971: 856–882.
- 1988: Lepidoptera – annotated catalogue and keys to family-group taxa. *Fauna of New Zealand* 14: 262 pp.
- *———; Fleming, C.A. 1967: A gynandromorph cicada. *New Zealand Entomologist* 3(5): 31–35.
- ; ———. 1969: Two New Zealand cicadas collected on Cook's Endeavour voyage, with description of a new genus. *New Zealand Journal of Science* 12: 929–957.
- Dugdale, J. S.; Fleming, C. A. 1978: New Zealand cicadas of the genus *Maoricicada* (Homoptera: Tibicidae). *New Zealand Journal of Zoology* 5(2): 295–340.
- Dumbleton, L. J. 1934: The apple-leafhopper (*Typhlocyba australis* Frogg.). *New Zealand Journal of Science and Technology* 16: 30–38.

- Dumbleton, L. J. 1937: Apple leafhopper investigations. *New Zealand Journal of Science and Technology* 18: 866–877.
- 1964: New records of Hemiptera-Homoptera and a key to the leafhoppers (Cicadellidae-Typhlocybinae) in New Zealand. *New Zealand Journal of Science* 7(4): 571–578.
- 1967: *Cicadella melissae* Curtis and *Idiocerus decimus-quartus* Schrank (Homoptera: Cicadellidae) established in New Zealand. *New Zealand Entomologist* 3(5): 41–42.
- Dworakowska, I. 1976: *Kybos* Fieb., subgenus of *Empoasca* Walsh (Auchenorrhyncha, Cicadellidae, Typhlocybinae) in Palaearctic. *Acta Zoologica Cracoviensia* 21(13): 387–463.
- Early, J. W.; Gilbert, R. F. 1993: Primary types of terrestrial and freshwater Protista, Annelida and Arthropoda in the Auckland Institute and Museum: An annotated list. *Records of the Auckland Institute and Museum* 30: 49–86.
- Edwards, J. 1881: An additional species of British Homoptera. *Entomologist's Monthly Magazine* 17: 224.
- Edwards, J. 1889: Fauna and flora of Norfolk. XX. *Transactions of the Norfolk Nature Society* 4: 702–711.
- Edwards, J. 1922: A generic arrangement of British Jassina. *Entomologist's Monthly Magazine* 58: 204–207.
- Emeljanov, A. F. 1989: To the problem of division of the family Cixiidae (Homoptera, Cicadina). *Entomological Review* 68 (4): 54–67. [Translated from *Entomologicheskoye Obozreniye* 68(1): 93–106.]
- 1991: Toward the problem of the limits and subdivisions of Achilidae (Homoptera, Cicadina). *Entomological Review* 71(1): 53–73. [Translated from *Entomologicheskoye Obozreniye* 71(2): 373–393.]
- 2000: New genera of the family Cixiidae (Homoptera, Fulgoroidea) from Australia and neighbouring territories. *Entomological Review* 80(3): 251–270. [In Russian; translated from *Entomologicheskoye Obozreniye* 79(1): 12–34.]
- 2001: The genus *Oliarus* s. str. and related genera from the Oriental Region (Homoptera: Cixiidae). *Zoosystematica Rossica* 10(1): 71–72.
- 2002: Contribution to classification and phylogeny of the family Cixiidae (Hemiptera, Fulgoromorpha). *Denisia* 4(176): 103–112.
- 2005: New genera and species of the family Achilidae (Homoptera). *Entomological Review* 85(1): 21–52. [In Russian; translated from *Entomologicheskoye Obozreniye* 84(1): 10–45.]
- Erichson, W. F. 1842: Beitrag zur Insecten-Fauna von Vandiemensland, mit besonderer Berücksichtigung der geographischen Verbreitung der Insekten, von Herausgeber. *Archiv für Naturgeschichte* 8(11): 83–291.
- Evans, J. W. 1935: The apple leaf-hopper. *Tasmanian Journal of Agriculture* 6(4): 155–157.
- 1937: Australian leafhoppers (Jassoidea, Homoptera). Part 4 (Ledrinae, Ulopidae, and Euscelidae, Paradorydiini). *Papers and Proceedings of the Royal Society of Tasmania* 1936: 37–50.
- 1938: Australian leafhoppers (Jassoidea, Homoptera). Part 8. *Papers and Proceedings of the Royal Society of Tasmania* 1938: 1–18.
- 1940: Some Queensland leafhoppers (Jassoidea, Homoptera) that attack lucerne. *Proceedings of the Royal Society of Queensland* 52: 10–13.
- 1941: A new genus of New Zealand leaf-hoppers (Jassoidea, Homoptera). *Transactions of the Royal Society of New Zealand* 71: 162–163 + plate 28.
- 1942a: New leafhoppers (Homoptera, Jassoidea) from Western Australia. *Journal of the Royal Society of Western Australia* 27: 143–163.
- 1942b: Some new leafhoppers from Australia and Fiji. *Proceedings of the Royal Society of Queensland* 54: 49–51.
- 1947a: A natural classification of leafhoppers (Jassoidea, Homoptera). Part 3. Jassidae. *Transactions of the Royal Entomological Society of London* 98(6): 105–271.
- 1947b: Some new Ulopinae (Homoptera, Jassidae). *Annals and Magazine of Natural History* (11)14: 140–150.
- 1947c: A new leafhopper from Victoria. (Homoptera: Jassidae). *Memoirs of the National Museum, Melbourne* 15: 126–127.
- 1961: Leaf-hoppers from Chile collected by the Royal Society expedition to southern Chile 1958/1959 (Homoptera: Cicadelloidea). *Annals and Magazine of Natural History* (13)4: 513–517.
- 1963: The zoogeography of New Zealand leafhoppers and frog-hoppers Insecta, Homoptera, Cicadelloidea and Cercopoidea. *Transactions of the Royal Society of New Zealand. Zoology* 3(9): 85–91.
- 1966: The leafhoppers and froghoppers of Australia and New Zealand. *Australian Museum Memoirs* 12: 1–347.

- Evans, J. W. 1969: Characteristics and components of Ledrinae and some new genera and new species from Australia and New Guinea (Homoptera: Cicadellidae). *Pacific Insects* 11(3-4): 735-754
- 1971a: Leafhoppers from New Guinea and Australia belonging to the subfamilies Macropsinae and Agalliinae with notes on the position of *Nionia* Ball and *Magnentius* Pruthi (Homoptera: Cicadellidae). *Pacific Insects* 13(2): 343-360.
- 1971b: Some new African Ulopini (Homoptera, Cicadellidae, Ulopinae). *Journal of Natural History* 5: 441-445.
- 1972: Some leafhoppers from New Guinea, Australia and Thailand belonging to the subfamily Jassinae and a new genus from New Guinea referred to a new subfamily, the Acostemminae. *Pacific Insects* 14: 647-662.
- 1974: New Caledonian leafhoppers and the systematic position of *Kosmiopelix* Kirkaldy and *Euacanthella* Evans (Homoptera: Cicadelloidea). *Pacific Insects* 16: 165-175.
- 1977: The leafhoppers and froghoppers of Australia and New Zealand (Homoptera: Cicadelloidea and Cercopoidea). Part 2. *Records of the Australian Museum* 31(3): 83-129.
- Eyles, A.C. 1971: The family Membracidae (Homoptera) present in New Zealand. *New Zealand Entomologist* 5(1): 47-48.
- ; Linnavuori, R. 1974: Cicadellidae and Issidae (Homoptera) of Niue Island, and material from the Cook Islands. *New Zealand Journal of Zoology* (1)1: 29-44.
- Fabricius, J. C. 1775: *Systema entomologiae, sistens insectorum classes, ordines, genera, species, adiectis synonymis, locis, descriptionibus, observationibus*. Officina Libraria Kortii, Flensburgi et Lipsiae. xxxii, 832 pp.
- 1781: *Species Insectorum exhibentes eorum differentias specificas, synonyma auctorum, loca natalia, metamorphosin adiectis observationibus, descriptionibus*. Impensis Carol. Ernest. Bohni, Hamburgi et Kolnii. 2: 1-517.
- Fairmaire, L. M. H. 1846: Revue de la tribu des Membracides. *Annales de la Société entomologique de France* (2)4: 479-531.
- Fallén, C. F. 1806: Forsök till Svenska Cicad-Arternas uppställning och beskrifning. *Nya Handlingar Konkliga Svenska Vetenskaps-Akademiens* 27: 113-130.
- Fennah, R. G. 1950a: A generic revision of the Achilidae (Homoptera: Fulgoroidea) with descriptions of new species. *Bulletin of the British Museum (Natural History), Entomology* 1: 3-170.
- 1950b: Fulgoroidea of Fiji. *Bernice P. Bishop Museum Bulletin* 202: 1-122.
- 1956: Insects of Micronesia, Homoptera: Fulgoroidea. *Insects of Micronesia* 6(3): 39-211.
- 1965: Delphacidae from Australia and New Zealand. Homoptera: Fulgoroidea. *Bulletin of the British Museum (Natural History), Entomology* 17: 1-59.
- *——— 1967: New species and new records of Fulgoroidea (Homoptera) from Samoa and Tonga. *Pacific Insects* 9: 29-72.
- 1969: Fulgoroidea (Homoptera) from New Caledonia and the Loyalty Islands. *Pacific Insects Monographs* 21: 1-116.
- 1975a: New cavernicolous cixiid from New Zealand (Homoptera: Fulgoroidea). *New Zealand Journal of Zoology* 2(3): 377-380.
- 1975b: Homoptera: Delphacidae from Ceylon. *Entomologica Scandinavica. Supplement* 4: 79-136.
- 1980: Selection of lectotype of *Ugyops caelatus* (White). *Entomologists Record and Journal of Variation* 92: 76.
- Ferrari, P. M. 1882: Cicadaria Agri Ligustici. *Annali del Museo de Genova* 18: 75-165.
- Fieber, F. X. 1866: Neue Gattungen und Arten in Homopteren (Cicadina Bur.). *Verhandlungen der Zoologisch-Botanischen Gesellschaft in Wien* 16: 497-516; pl. 7.
- 1872: Katalog der europäischen Cicadinen, nach Originalien mit Benützung der neuesten Literatur. Carl Grolld's Son, Wien. 19 pp.
- *Fitzgerald, B. M.; Karl, B. J. 1979: Foods of feral house cats (*Felis catus* L.) in forest of the Orongorongo Valley, Wellington. *New Zealand Journal of Zoology* 6(1): 110-125.
- *———; ———; Veitch, C. R. 1991: The diet of feral cats (*Felis catus*) on Raoul Island, Kermadec group. *New Zealand Journal of Ecology* 15(2): 123-129.
- *Fleming, C. A. 1962: New Zealand biogeography - A paleontologist's approach. *Tuatara* 10(2): 53-108.
- *——— 1966: Notes on the distribution of New Zealand Cicadas. *New Zealand Entomologist* 3(5): 16-17.
- 1969: [Genus *Amphipsalta* Fleming, nov.]. Pp. 932-934. In: Dugdale, J.S.; Fleming, C.A. 1969: Two New Zealand Cicadas collected on Cook's Endeavour

- voyage, with description of a new genus. *New Zealand Journal of Science* 12: 929–957.
- 1971: A new species of cicada from rock fans in southern Wellington, with a review of three species with similar songs and habitat. *New Zealand Journal of Science* 14(3): 443–479.
- 1973: The Kermadec Islands cicada and its relatives (Hemiptera: Homoptera). *New Zealand Journal of Science* 16: 315–332.
- 1975a: Acoustic behaviour as a generic character in New Zealand cicadas. *Journal of the Royal Society of New Zealand* 5(1): 47–64.
- 1975b: Adaptive radiation in New Zealand Cicadas. *Proceedings of the American Philosophical Society* 119(40): 298–306.
- 1975c: Cicadas. *New Zealand's Nature Heritage* 4: 1568–1572, 1591–1595.
- 1984: The cicada genus *Kikihia* Dugdale (Hemiptera: Homoptera). Part 1. The New Zealand green foliage cicadas. *Records of the National Museum of New Zealand* 2(18): 191–206.
- *———; Dugdale, J. S. 1974: *Cicada cingulata* (Fabricius) var. *obscura* Hudson, 1891 (Insecta, Order Hemiptera, Suborder Homoptera): proposed suppression as a *nomen oblitum* Z.N.(S.) 1888. *Bulletin of Zoological Nomenclature* 31(3): 140–141.
- ; Ordish, R. G. 1966: Type specimens of G. V. Hudson's taxa of New Zealand cicadas (Genus *Melampsalta*: Hemiptera Homoptera). *Records of the Dominion Museum* 5(20): 195–200.
- Fletcher, M. J. 1979a: Notes on Australian Flatidae (Homoptera: Fulgoroidea) including a new synonymy. *General and Applied Entomology* 11: 67–71.
- 1979b: The external morphology of *Scolypopa australis* (Walker) (Homoptera: Ricaniidae). *Journal of the Australian Entomological Society* 18: 157–168.
- 1985: Revision of the genus *Siphanta* Stål (Homoptera: Fulgoroidea: Flatidae). *Australian Journal of Zoology Supplementary Series* 110: 1–94.
- 1988: The Australian genera of Flatidae (Homoptera: Fulgoroidea). *General and Applied Entomology* 20: 9–32.
- 1999: The Australian Deltocephalinae. Cardiff, UK, September 1999. *Abstracts of the 10th International Auchenorrhyncha Congress*. 1 p.
- 2000: A new genus, *Mayawa*, for the reception of *Limotettix capitatus* Kirkaldy (Hemiptera: Cicadellidae: Deltocephalinae) and descriptions of five new species of *Mayawa*. *Australian Journal of Entomology* 39(3): 103–110.
- 2002: A new species of *Siphanta* Stål (Hemiptera: Flatidae) from Western Australia and notes on other species of the genus. *Australian Entomologist* 29(3): 97–102.
- 2004: A revision of the genus *Horouta* Knight with description of two new species and notes on other species of Deltocephalinae (Hemiptera: Cicadellidae). *General and Applied Entomology* 33: 45–54.
- *——— 2006: A new genus, *Warlucephala*, for the reception of *Deltocephalus arunda* Jacobi, 1909, and two new species (Hemiptera: Cicadellidae: Deltocephalinae). *Records of the Australian Museum* 58: 125–128.
- 2009 (and updates): Identification keys and checklists for the leafhoppers, planthoppers and their relatives occurring in Australia and neighbouring areas (Hemiptera: Auchenorrhyncha). <http://www1.dpi.nsw.gov.au/keys/auch/index.html>
- ; Carver, M. 1991: Superfamily Fulgoroidea. Pp. 474–479. In: Division of Entomology, CSIRO, The Insects of Australia, 2nd edition. Melbourne University Press, Carlton. 2 vols, xviii + 1139 pp.
- ; Condello, A. A. 1993: Lectotype designations and new synonymies for G. W. Kirkaldy's Australian Deltocephalinae (Homoptera: Cicadellidae) held in the B.P. Bishop Museum, Honolulu. *General and Applied Entomology* 25: 35–59.
- *———; Donaldson, J. F. 1992: *Empoasca (Empoasca) smithi*, a new species of leafhopper damaging citrus in Queensland and notes on other Typhlocybinae from Australia (Hemiptera: Cicadellidae). *Journal of the Australian Entomological Society* 31(2): 183–186.
- ; Evans, J. W.; Carver, M. 1991a: Superfamily Cercopoidea. Pp. 467–468. In: Division of Entomology, CSIRO, The Insects of Australia, 2nd edition. Melbourne University Press, Carlton. 2 vols, xviii + 1139 pp.
- ; ———; ——— 1991b: Superfamily Cicadelloidea. Pp. 468–473. In: Division of Entomology, CSIRO, The Insects of Australia, 2nd edition. Melbourne University Press, Carlton. 2 vols, xviii + 1139 pp.
- ; Knight, W.J. 1998: New Australian records for exotic leafhoppers. *Abstracts of the 29th Annual General Meeting and Scientific Conference of the Australian Entomological Society* 1998: 41.
- ; Larivière, M.-C. 2001 (and updates): Identification keys and checklists for the leafhoppers, planthoppers and their relatives occurring in Australia and New

- Zealand (Hemiptera: Auchenorrhyncha). *Web publication now superseded by Fletcher (2009 and updates)*.
- Fletcher, M. J.; Larivière, M.-C. 2009: *Anzygina*, a new genus for some microleafhopper species from Australia, New Zealand and neighbouring areas formerly placed in the genus *Zygina* Fieber (Cicadellidae: Typhlocybinae: Erythroneurini). *Australian Journal of Entomology* 48: 164–176.
- ; Stevens, M. M. 1988: Key to subfamilies and tribes of Australian Cicadellidae (Hemiptera: Homoptera). *Journal of the Australian Entomological Society* 27: 61–67.
- ; Watson, S. 2002a (Update by M. J. Fletcher, 2006): Hemiptera: Cercopoidea. *Australian Faunal Directory*. Viewed 31 March 2006. <http://www.deh.gov.au/biodiversity/abrs/online-resources/fauna/afd/index.html>
- ; ——— 2002b (Update by M. J. Fletcher, 2006): Hemiptera: Membracoidea. *Australian Faunal Directory*. Viewed 1 April 2005. <http://www.deh.gov.au/biodiversity/abrs/online-resources/fauna/afd/index.html>
- ; ——— 2003 (Updated 2006): Hemiptera: Fulgoroidea. *Australian Faunal Directory*. Viewed 31 March 2006 (except Cixiidae). <http://www.deh.gov.au/biodiversity/abrs/online-resources/fauna/afd/index.html>
- ; Williams, D. G. 1987: The occurrence in Australia of *Ribautiana ulmi* (L.) (Homoptera: Cicadelloidea: Typhlocybinae). *Journal of the Australian Entomological Society* 26(4): 373–374.
- *Fourcroy, A. F., de. 1785: *Secunda sectio insectorum. Insecta Hemiptera. Entomologia Parisiensis, sive Catalogue Insectorum quae in Agro Prisiensi reperiuntur; Secundum methodum Geoffraeanam in sectiones, genera & species distributus; Cui addita sunt nomina trivalia & fere trecentae novae Species. Aedibus Serpentinensis, Parisi 1: viii, 231 pp.*
- Freytag, P. H. 1965: A revision of the Nearctic species of the genus *Idiocerus* (Homoptera: Cicadellidae: Idiocerinae). *Transactions of the American Entomological Society* 91: 361–430.
- *Garrick, A. S. 1981: Diets of pipits and skylarks at Huiarua Station, Tokomaru Bay, North Island, New Zealand. *New Zealand Journal of Ecology* 4: 106–114.
- Ghauri, M. S. K. 1963: A new species of *Zygina* Fieber (1866) (Homoptera: Cicadelloidea) from New Zealand. *Annals and Magazine of Natural History* (13)6: 39–42.
- 1966: Revision of the genus *Orosius* Distant. *Bulletin of the British Museum (Natural History), Entomology* 18(7): 231–252.
- 1980: A new species of *Zygina* from Papua New Guinea, and records of some leafhopper and planthopper species (Homoptera: Cicadelloidea and Delphacidae). *New Zealand Journal of Zoology* 7: 207–209.
- Gibbs, G. W. 2006: *Ghosts of Gondwana*. Craig Potton Publishing, Nelson. 232 pp.
- Goding, F. W. 1903: A monograph of the Australian Membracidae. *Proceedings of the Linnean Society of New South Wales* 28: 2–41.
- Goding, F. W.; Froggatt, W. W. 1904: Monograph of the Australian Cicadidae. *Proceedings of the Linnean Society of New South Wales* 29: 561–670.
- Goeze, J. A. E. 1778: Hemiptera. *Entomologische Beyträge zu des Ritter Linné Zwölften ausgabe des Natursystems* 2: i–lxxii, 1–352.
- Greber, R. S. 1977: Cereal chlorotic mottle virus (CCMV), a rhabdovirus of Graminae transmitted by the leafhopper *Nesoclutha pallida*. *Australian Plant Pathology Society Newsletter* 6: 17.
- *Gressitt, J. L. 1964: Insects of Campbell Island. Summary. *Pacific Insects Monographs* 7: 531–600.
- Grylls, N. E. 1963: A striate mosaic virus disease of grasses and cereals in Australia, transmitted by the cicadellid *Nesoclutha obscura*. *Australian Journal of Agricultural Research* 14: 143–153.
- *Guérin-Méneville, F. E. 1829: Homoptera. Plates from: *Iconographie du règne animal de G. Cuvier*. 104 Pls.
- Guérin-Méneville, F. E. 1834: Essai d'un nouvel arrangement des Hémiptères de la section des Homoptères, et révision de la tribu des Fulgorelles. Pp. 445–480. In: Guérin-Méneville, F.E. *Voyage aux Indes-Orientales, par le nord de l'Europe, les provinces du Caucase, la Géorgie, l'Arménie et la Perse, suivi de détails topographiques, statistiques et autres sur le Pégou, les Isles de Java, de Maurice et de Bourbon, sur le Cap-de-bonne-Espérance et Sainte Hélène pendant les années 1825–1829, publié par M.C. Bélanger. Zoologie. Insectes*. 1834: 445–480; pl. 3.
- Günthart, H. 1971: Kleinzikaden (Typhlocybinae) an Obstbäumen in der Schweiz. *Schweizerischen Zeitschrift für Obst- und Weinbau* 107: 285–306.
- *Gurr, L. 1954: Some insect food of nestling red billed gulls (*Larus novaehollandiae scopulinus*). *Notornis* 5: 208–209.

- Hacker, H. 1926: New species of Queensland Cercopidae (Homoptera). *Memoirs of the Queensland Museum* 8: 243–248.
- Hamilton, K. G. A. 1979: Synopsis of the North American Philaenini (Rhynchotha: Homoptera: Cercopidae) with a new genus and four new species. *Canadian Entomologist* 111: 177–141.
- 1980a: Aphrophorinae of Polynesia (Rhynchotha: Homoptera: Cercopidae). *Pacific Insects* 22: 347–360.
- 1980b: Aphrophorinae of the Solomon Islands (Rhynchotha: Homoptera: Cercopidae). *Pacific Insects* 22: 361–379.
- 1980c: Contributions to the study of the world Macropsini (Rhynchotha: Homoptera: Cicadellidae). *Canadian Entomologist* 112: 875–932.
- 1981a: Aphrophorinae of New Caledonia and the Loyalty Islands (Rhynchotha: Homoptera: Cercopidae). *Pacific Insects* 23: 451–464.
- 1981b: Aphrophorinae of the Fiji, New Hebrides and Banks Islands (Rhynchotha: Homoptera: Cercopidae). *Pacific Insects* 23: 465–477.
- 1999a: *Philaenus spumarius* (L.) [Meadow spittlebug]. In: Commonwealth Agriculture Bureau International, Data Sheet for Crop Protection Compendium. Published as a CD-ROM.
- 1999b: The ground-dwelling leafhoppers Myerslopiidae, new family, and Sagmatiini, new tribe (Homoptera: Membracoidea). *Invertebrate Taxonomy* 13: 207–235.
- 2001: A new family of froghoppers from the American tropics (Hemiptera: Cercopoidea: Epipygidae). *Biodiversity* 2(3): 15–22.
- ; Morales, C. F. 1992: Cercopidae (Insecta: Hemiptera). *Fauna of New Zealand* 25: 1–40.
- *Harris, A. C. 1993: Unseasonal occurrence of *Kikihia subalpina* (Hudson) (Hemiptera: Homoptera: Cicadidae) adults in Dunedin during June, 1993. *Weta* 16(1): 8–9.
- *Helson, G. A. H. 1951: The transmission of witches' broom virus disease of lucerne by the common brown leafhopper, *Orosius argentatus* (Evans). *Australian Journal of Scientific Research, Series B* 4(2): 115–124.
- Herrich-Schäffer, G. A. W. 1834: Deutschlands Insecten, 124: 1–15.
- Hill, K. B. R.; Marshall, D. C.; Cooley, J. R. 2005: Crossing Cook Strait: Possible human transportation and establishment of two New Zealand cicadas from North Island to South Island (*Kikihia scutellaris* and *K. ochrina*, Hemiptera: Cicadidae). *New Zealand Entomologist* 28: 71–80.
- ; Simon, C.; Marshall, D. C.; Chambers, G. K. 2009: Surviving glacial ages within the Biotic Gap: phylogeography of the New Zealand cicada *Maoricicada campbelli*. *Journal of Biogeography* 36: 675–692.
- Hill, R. L.; Steven, D. 1989: *Scolypopa australis* (Walker), passionvine hopper (Homoptera: Ricaniidae). Pp. 241–244. In: Cameron, P. J.; Hill, R. L.; Bain, J.; Thomas, W. P. (eds.). A review of biological control of invertebrate pests and weeds in New Zealand 1874–1987. Technical communication, CAB International Institute of Biological Control 10, CAB International, Wallingford, U.K.
- *Hitchmough, R. (compiler) 2002: New Zealand Threat Classification System lists 2002. *Threatened Species Occasional Publication* 23. Department of Conservation, Wellington. 210 pp.
- ; Bull, L.; Cromarty, P. (compilers) 2007: New Zealand Threat Classification System lists – 2005. Department of Conservation, Wellington. 194 pp. <http://www.doc.govt.nz>
- Hoch, H. 2005: On the identity of the type species of the planthopper genus *Oliarus* Stål, 1862, *Oliarus walkeri* (Stål, 1859) (Hemiptera: Cixiidae). *Zootaxa* 1056: 53–60.
- 2006a: Systematics and evolution of *Iolania* (Hemiptera: Fulgoromorpha: Cixiidae) from Hawai'i. *Systematic Entomology* 31(2): 302–320.
- 2006b: Cixiidae from eastern Polynesia: *Oteana* gen. nov and *Manurevana* gen. nov (Hemiptera: Fulgoromorpha). *Zootaxa* 1209: 1–47.
- ; Howarth, F. G. 1989a: Reductive evolutionary trends in two new cavernicolous species of a new Australian cixiid genus (Homoptera: Fulgoroidea). *Systematic Entomology* 14: 179–196.
- Hoch, H.; Howarth, F. G. 1989b: Six new cavernicolous cixiid planthoppers in the genus *Solonaima* from Australia (Homoptera: Fulgoroidea). *Systematic Entomology* 14: 377–402.
- Holzinger, W. E.; Emeljanov, A. F.; Kammerlander, I. 2002: The family Cixiidae Spinola 1839 (Hemiptera: Fulgoromorpha), a review. *Denisia* 4: 113–138.
- ; Kammerlander, I.; Nickel, H. 2003: The Auchenorrhyncha of Central Europe - Die Zikaden Mitteleuropas. Volume 1: Fulgoromorpha, Cicadomorpha excl. Cicadellidae. Brill, Leiden. 673 pp.
- Hudson, G. V. 1891: On the New Zealand Cicadidae. *Transactions and Proceedings of the New Zealand Institute* 23: 49–55.
- *——— 1892: An elementary manual of New Zealand entomology. Being an introduction to the study of our native insects. West and Newman, London. 128 pp., 20 pls.

- Hudson, G. V. 1893: Synonymical notes on New Zealand Cicadidae. *Transactions and Proceedings of the New Zealand Institute* 25: 162–163.
- *——— 1927: Notes on variation in neural structure of New Zealand cicadas (genus *Melampsalta*). *Transactions of the New Zealand Institute* 58: 73–74.
- 1936: Description of a new species of New Zealand cicada. *Transactions and Proceedings of the Royal Society of New Zealand* 66(3): 230.
- 1950: The New Zealand Cicadas. Chapter IV, pp. 123–151. In: *Fragments New Zealand Entomology*. - a popular account of all New Zealand cicadas. The natural history of the New Zealand glow-worm. A second supplement to the butterflies and moths of New Zealand and notes on many other native insects. Ferguson and Osborn, Wellington. 188 pp., 18 pls.
- Hutton, F. W. 1874: List of the insects recorded as having been found in New Zealand previous to the year 1870. *Transactions and Proceedings of the New Zealand Institute* 6 (1873): 158–171.
- 1898a: On a collection of insects from the Chatham Islands with descriptions of three new species. *Transactions and Proceedings of the New Zealand Institute* 30: 155–160.
- 1898b: Synopsis of the Hemiptera of New Zealand which have been described previous to 1896. *Transactions and Proceedings of the New Zealand Institute* 30: 167–187.
- 1904: *Index faunae novae-zealandiae*. London: Dulau & Co. viii, 372 pp.
- International Commission on Zoological Nomenclature. 1999: *International Code of Zoological Nomenclature, Fourth Edition*. The International Trust for Zoological Nomenclature, London. xxx, 306 pp.
- Ishihara, T. 1953: A tentative check list of the superfamily Cicadelloidea of Japan (Homoptera). *Scientific Reports of the Matsuyama Agricultural College* 11: 1–72.
- Jacobi, A. 1909: Homoptera. *Die Fauna Südwest-Australiens, Ergebnisse der Hamburger südwest-australischen Forschungsreise 1905*. Herausgegeben von Prof. W. Michaelsen und Dr R. Hartmeyer 2: 337–345.
- 1916: Kritische Bemerkungen über die Ricaniinae (Rhynchota Homoptera). *Deutsche Entomologische Zeitschrift* 1915: 299–314.
- 1928: Results of Dr E. Mjöberg's Swedish Scientific Expeditions to Australia 1910–1913. Rhynchota, Homoptera. 1. Fulgoridae und Cercopidae. *Arkiv fuer Zoologi* 19A(28): 1–50.
- Jones, J. R.; Deitz, L. L. 2009: Phylogeny and systematics of the leafhopper subfamily Ledrinae (Hemiptera: Cicadellidae). *Zootaxa* 2186: 1–120.
- Kato, M. 1956: The Biology of the Cicadas. [Bulletin of the Cicadidae Museum]. Jinbocho Kanda, Tokyo: Iwasaki Shoten. 319 pp.
- 1960: Homoptera: Membracidae. *Insects of Micronesia* 6(5): 345–351.
- *King, C. M.; Moody, J. E. 1982: The biology of the stoat (*Mustela erminea*) in the National Parks of New Zealand. 2. Food habits. *New Zealand Journal of Zoology* 9(1): 57–80.
- Kirby, W. F. 1818: A description of several new species of insects collected in New Holland by Robert Brown, Esq., F.R.S., Lib. Linn. Soc. *Transactions of the Linnean Society of London. Zoology* 12: 454–482.
- 1896 (1895): Notes on the Cicadidae of New Zealand. *Transactions and Proceedings of the New Zealand Institute* 28: 454–459.
- Kirkaldy, G. W. 1899: Eine neue Hawaii'sche Fulgoriden-Gattung und Art. *Entomologisches Nachrichten. Dresden* 25: 359.
- 1900: Bibliographical and nomenclatorial notes on the Rhynchota. No. 1. *The Entomologist* 33: 238–243.
- 1901: On the nomenclature of the genera of the Rhynchota, Heteroptera and auchenorrhynchous Homoptera. *The Entomologist* 34: 336–340.
- 1902: Hemiptera. *Fauna Hawaii*. 3(2): 93–174.
- 1904: Some new Oahuan (Hawaiian) Hemiptera. *The Entomologist* 37: 174–179.
- 1906: Leafhoppers and their natural enemies. Part IX, Leafhoppers, Hemiptera. *Bulletin of the Hawaiian Sugar Planters Association Division of Entomology* 1(9): 271–479.
- 1907a: Leafhoppers – Supplement. (Hemiptera). *Bulletin of the Hawaiian Sugar Planters Association Division of Entomology* 3: 1–186.
- 1907b: Some annotations to M. Distant's recent Catalogue of the Cicadidae. (Hem.). *Annales de la Société Entomologique de Belgique* 51: 303–309; separate paged 1–7.
- 1908: Notes on some Singhalese Hemiptera. *Annales de la Société Entomologique de Belgique* 52: 9–140.
- 1909a: A list of Hemiptera of the maorian sub-region, with notes on a few species. *Transactions of the New Zealand Institute* 41: 22–29.

- Kirkaldy, G. W. 1909b: On a new derbid homopteron from New Zealand and notes on other Hemiptera. *Proceedings of the Hawaiian Entomological Society* 2(2): 80–81.
- *——— 1910: On some preoccupied generic names in insects. *Canadian Entomologist* 42: 8.
- Kirschbaum, C. L. 1868: Die Cicadinen der Gegend von Wiesbaden und Frankfurt A.M. nebst einer Anzahl neuer oder schwer zu unterscheidender Arten aus anderen Gegenden Europa's Tabellarisch Beschrieben. *Jahrbücher des Vereins für Naturkunde im Herzogthum Nassau* 21–22: 1–202.
- Knight, W. J. 1973a: Hecalinae of New Zealand (Homoptera: Cicadellidae). *New Zealand Journal of Science* 16: 957–969.
- 1973b: Ulopiinae of New Zealand (Homoptera: Cicadellidae). *New Zealand Journal of Science* 16: 971–1007.
- 1974a: Revision of the New Zealand genus *Novothymbris* (Homoptera: Cicadellidae). *New Zealand Journal of Zoology* 1(4): 453–473.
- 1974b: Leafhoppers of New Zealand: subfamilies Aphrodinae, Jassinae, Xestocephalinae, Idiocerinae, and Macropsinae (Homoptera: Cicadellidae). *New Zealand Journal of Zoology* 1(4): 475–493.
- 1975: Deltocephalinae of New Zealand (Homoptera: Cicadellidae). *New Zealand Journal of Zoology* 2(2): 169–208.
- 1976a: Typhlocybinae of New Zealand (Homoptera: Cicadellidae). *New Zealand Journal of Zoology* 3(2): 71–87.
- 1976b: The leafhoppers of Lord Howe, Norfolk, Kermadec, and Chatham Islands and their relationship to the fauna of New Zealand (Homoptera: Cicadellidae). *New Zealand Journal of Zoology* 3(2): 89–98.
- 1983: The leafhopper genus *Batracomorphus* (Cicadellidae, Jassinae) in the eastern Oriental and Australian Regions. *Bulletin of the British Museum (Natural History) Entomology* 47(2): 27–210.
- 1987: Leafhoppers of the grass-feeding genus *Balclutha* (Homoptera: Cicadellidae) in the Pacific Region. *Journal of Natural History* 21: 1173–1224.
- ; Webb, M.D. 1993: The phylogenetic relationships between virus vector and other genera of macrosteline leafhoppers, including descriptions of new taxa (Homoptera: Cicadellidae). *Systematic Entomology* 18: 11–55.
- *Kuznetsova, V. G. 1993: Chromosome numbers in the Auchenorrhyncha and their taxonomic significance. Pp. 5–6. In: Drosopoulos, S.; Petrakis, P. V.; Claridge, M. F.; de Vrijer, P. W. F. (eds) Proceedings of the 8th Auchenorrhyncha Congress, Delphi, Greece, 9–13 August 1993.
- Kwon, Y. J.; Lee, C. E. 1979: On some new and little known Palaearctic species of leafhoppers (Homoptera: Auchenorrhyncha: Cicadellidae). *Nature and Life* 9(2): 69–97.
- Lallemand, V. 1912: Homoptera Fam. Cercopidae. *Genera Insectorum* 143: 1–167 + 108 plates.
- 1928: Hemiptera. Cercopidae. Part II. *Insects of Samoa and other Samoan Terrestrial Arthropoda* 2: 47–54.
- 1936: Description de trois genres et de deux espèces nouvelles de Homoptera de l'Insulinde et de l'Océanie. *Festschrift zum 60. Geburtstag von Professor Dr Embrik Strand*. Riga, Parka Iela 8: Spiestuve Latvija Vol. 1, pp. 264–266.
- 1937: Check-list of the Cercopidae of Oceania. *Entomologist's Monthly Magazine* 73: 252–258.
- Lane, D. H. 1995: The recognition concept of species as applied in the analysis of putative hybridization in New Zealand cicadas of the genus *Kikihia* (Insecta: Hemiptera: Tibiciniidae). Pp. 367–421 In: Lambert, D. M.; Spencer, H. G. (eds). Speciation and the recognition concept: theory and application. John Hopkins University Press, Baltimore, Md.
- *Langham, N. P. E. 1990: The diet of feral cats (*Felis catus* L.) on Hawke's Bay farmland, New Zealand. *New Zealand Journal of Zoology* 17(2): 243–255.
- Larivière, M.-C. 1997a: New Zealand Cixiidae (Hemiptera): Taxonomy, faunal composition, regional diversity, and ecological preferences. *Program & Abstract Book, 9th International Auchenorrhyncha Congress, Sydney, 17–21 February 1997*: 25.
- 1997b: Taxonomic review of *Koroana* Myers (Hemiptera: Cixiidae), with description of a new species. *New Zealand Journal of Zoology* 24: 213–223.
- 1999: Cixiidae (Insecta: Hemiptera: Auchenorrhyncha). *Fauna of New Zealand* 40: 93 pp.
- (ed.) 2005 (and updates): *Checklist of New Zealand Hemiptera (excluding Sternorrhyncha)*. *The New Zealand Hemiptera Website, NZHW 04*. <http://hemiptera.landcareresearch.co.nz/>
- ; Fletcher, M. J. 2004 (and updates): The New Zealand leafhoppers and treehoppers (Hemiptera: Auchenorrhyncha): web-based identification keys and checklist. *The New Zealand Hemiptera Website, NZHW 02*. <http://hemiptera.landcareresearch.co.nz/>

- Larivière, M.-C.; Fletcher, M. J. 2008: A new genus, *Zeoliarus*, for the endemic New Zealand species *Oliarus atkinsoni* Myers and *O. oppositus* (Walker) (Hemiptera: Fulgoromorpha: Cixiidae: Cixiinae: Pentastirini). *Zootaxa* 1891: 66–68.
- *———; ———; Jacob, H. 2004: English-Maori identification key to leafhopper and treehopper genera occurring in New Zealand. *The New Zealand Hemiptera Website, NZHW 03*. <http://hemiptera.landcareresearch.co.nz/>
- ; Hoch, H. 1998: The New Zealand planthopper genus *Semo* White (Hemiptera: Cixiidae): Taxonomic review, geographical distribution, and biology. *New Zealand Journal of Zoology* 25: 429–442.
- ; Larochelle, A. 2004: Heteroptera (Insecta: Hemiptera): catalogue. *Fauna of New Zealand* 50: 1–330.
- ; Rhode, B.E. 2002 (and updates): *Virtual collection of primary types of New Zealand Hemiptera (excluding Sternorrhyncha)*. *The New Zealand Hemiptera Website, NZHW 01*. <http://hemiptera.landcareresearch.co.nz/>
- ; ———; Larochelle, A. 2006 (and updates): New Zealand Cicadas (Hemiptera: Cicadidae): A virtual identification guide. *The New Zealand Hemiptera Website, NZHW 05*. <http://hemiptera.landcareresearch.co.nz/>
- Latreille, P. A. 1804: Division seconde. Famille quarante-huitième. Cicadaïres; cicadariae. *Histoire Naturelle des Insectes* 12: 5–424.
- Lee, C. E. 1979: Illustrated flora and fauna of Korea. 23. Insecta 7. Samhwa Publishing Co., Ltd. Seoul. 1070 pp. [in Korean].
- Lees, D. R. 1993: Novel New Zealand populations of the meadow spittlebug *Philaenus spumarius* (Cercopidae). *Proceedings of the 8th Auchenorrhyncha Congress, Delphi, Greece*. Pp. 95–97.
- Lewis, R. H. 1834: Descriptions of some new genera of British Homoptera. *Transactions of the Royal Entomological Society of London* 1: 47–52.
- Liang, A.-P. 1998: Oriental and eastern Palaearctic aphrophorid fauna (Homoptera: Aphrophoridae): taxonomic changes and nomenclatural notes. *Oriental Insects* 32: 239–357.
- ; Fletcher, M. J. 2002: Morphology of antennal sensilla in four Australian cercopid spittlebug species (Hemiptera: Cercopidae) with proposal of new tribal placement of three genera. *Australian Journal of Entomology* 41: 39–44.
- ; ——— 2003: Review of the Australian aphrophorid spittlebugs (Hemiptera: Aphrophoridae). *Australian Journal of Entomology* 42: 84–93.
- *———; ———; Jiang, G. M. 2005: The endemic Australian spittlebug genus *Anyllis* Kirkaldy (Hemiptera: Aphrophoridae) with description of a new species from Tasmania. *Journal of the Kansas Entomological Society* 78(4): 301–307.
- Lindberg, H. 1924: Anteckningar om Ostfennoskandiens Cicadina. *Acta Societatis pro Fauna et Flora Fennica* 56: 3–49.
- 1936: Die Cicadinen der Kanarischen Inseln. *Commentationes Biologicae* 6(9): 1–19.
- *Lindsay, C. J.; Ordish, R. G. 1964: The food of the morepork. *Notornis* 11: 154–158.
- Linnaeus, C. 1758: *Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis*. Editio decima, reformata. Holmiae. ii, 824 pp.
- Linnavuori, R. E. 1951: Hemipterological observations. *Suomen Hyönteistieteellinen Aikakauskirja* 17: 51–65.
- 1959: Revision of the Neotropical Deltocephalinae and some related subfamilies (Homoptera). *Annales Zoologici Societatis Zoologicae Botanicae Fennicae 'Vanamo'* 20(1): 1–370.
- 1960a: Cicadellidae (Homoptera, Auchenorrhyncha) of Fiji. *Acta Entomologica Fennica* 15: 1–71.
- Linnavuori, R. E. 1960b: Homoptera: Cicadellidae. *Insects of Micronesia* 6(5): 225–344.
- 1975: Homoptera: Cicadellidae, Supplement. *Insects of Micronesia* 6(9): 611–632.
- 1978: Studies on the family Cicadellidae (Homoptera, Auchenorrhyncha). I. A revision of the Macropsinae of the Ethiopian region. *Acta Entomologica Fennica* 33: 1–17.
- ; Quartau, J. A. 1975: Revision of the Ethiopian Cicadellidae (Hemiptera-Homoptera): Iassinae and Acroponinae. *Etudes Africaines* 3: 1–170.
- Löcker, B.; Fletcher, M. J.; Gurr, G. M. 2006a: First record of the planthopper tribe Mnemosynini in Australia with the description of two new species (Hemiptera: Fulgoromorpha: Cixiidae). *Russian Entomological Journal* 15(3): 287–294.
- ; ———; Larivière, M.-C. 2006b: Illustrated key to the genera of the tribe Pentastirini found in Australia (Hemiptera: Fulgoromorpha: Cixiidae). <http://www.agric.nsw.gov.au/Hort/ascu/fulgor/cixiid/penta00.htm>
- ; ———; ———; Gurr, G. F. 2006c: The Australian Pentastirini (Hemiptera: Fulgoromorpha: Cixiidae). *Zootaxa* 1290: 1–138.

- Löcker, B.; Fletcher, M. J.; Larivière, M.-C. Gurr, G. M. Holzinger, W. E.; Löcker, H. 2006d: Taxonomic and phylogenetic revision of the Gelastocephalini (Hemiptera: Cixiidae). *Invertebrate Systematics* 20: 59–160.
- ; ———; ———; Löcker, H. 2006e: Illustrated key to the genera of the planthopper tribe Gelastocephalini (Hemiptera: Cixiidae: Fulgoromorpha). <http://www.agric.nsw.gov.au/Hort/ascu/fulgor/cixiid/gel00.htm>
- ; ———; Gurr, G. M. 2007a: Revision of the genus *Innobia* Jacobi (Hemiptera: Fulgoromorpha: Cixiidae) with the description of six new species and comments on other Australian Bixini genera. *Australian Journal of Entomology* 46: 45–55.
- ; ———; Holzinger, W. E.; Gurr, G. M. 2007b: Revision of the Australian Andini (Hemiptera: Fulgoromorpha: Cixiidae) with a description of five new species. *Zootaxa* 1475: 43–59.
- Logan, D.; Connolly, P. 2005: Cicadas from kiwifruit orchards in New Zealand and identification of their final instar exuviae (Cicadidae: Homoptera). *New Zealand Entomologist* 28: 37–48.
- Lower, H. F. 1952: A revision of Australian species previously referred to the genus *Empoasca* (Cicadellidae: Homoptera). *Proceedings of the Linnean Society of New South Wales* 76(5–6): 190–221.
- *Macfarlane, R. P.; Pottinger, R. P. 1976: Insects affecting lucerne seed production. *Proceedings of the New Zealand Weed Pest Control Conference* 29:19–22. [Summarised in *New Zealand Farmer* 97(17): 45.]
- *MacMillan, B. W. H.; Pollock, B. J. 1986: Food of nesting house sparrows *Passer domesticus* in mixed farmland of Hawke's Bay, New Zealand. *New Zealand Journal of Zoology* 12(3): 307–317.
- Mahmood, S. H. 1967: A study of the typhlocybinae genera of the Oriental region (Thailand, the Philippines and adjoining areas). *Pacific Insects Monographs* 12: 1–52.
- Maldonado Capriles, J. 1964: Studies on Idiocerinae leafhoppers: II The Indian and Philippine species of *Idiocerus* and the genus *Idioscopus*. (Homoptera: Cicadellidae). *Proceedings of the Entomological Society of Washington* 66(2): 89–100.
- Marris, J. W. M. 2007 (and updates): 'Cicadas', Te Ara – The Encyclopedia of New Zealand. <http://www.TeAra.govt.nz/TheBush/InsectsAndOther-Invertebrates/Cicadas/en>
- Marshall, T. A. 1866: An essay towards a knowledge of British Homoptera. *Entomologist's Monthly Magazine* 2: 265–268.
- Matsumura, S. 1902: Monographie des Jassinen Japans. *Természetráji Füzetek. Kiadja a Magyar Nemzeti Museum Budapest* 25: 353–404.
- 1914: Die Jassinen und einige neue Acocephalinen Japans. *Journal of the College of Agriculture, Tohoku Imperial University, Sapporo* 5: 165–240.
- 1931: A revision of the Palaearctic and Oriental typhlocybid - genera, with descriptions of new species and new genera. *Insecta Matsumurana* 6: 55–91.
- *——— 1932: The typhlocybid genera of the late Distant. *Insecta Matsumurana* 6: 190–191.
- 1940: Homopterous insects collected at Kotosho (Botel Tobago), Formosa, by Mr. Tadao Kano. *Insecta Matsumurana* 15(1–2): 34–51.
- McGuinness, C. A. 2001: The conservation requirements of New Zealand's nationally threatened invertebrates. *Department of Conservation, Threatened Species Occasional Publication* 20: 658 pp. <http://www.doc.govt.nz/>
- *McKamey, S. H. 1998: Taxonomic catalogue of the Membracoidea (exclusive of leafhoppers): second supplement to fascicle 1 – Membracidae of the general catalogue of the Hemiptera. *Memoirs of the American Entomological Institute* 60: 1–377.
- *Medler, J. T. 1985: Types of Flatidae (Homoptera) III. Lectotype designations and taxonomic notes on species in the Budapest Museum. *Folia Entomologica Hungarica* 46(2): 111–116.
- 1986a: *Anzora* and *Dworena*, two new genera erected for Australian species formerly placed in *Paratella* and *Sephena*. (Homoptera: Fulgoridae). *Insecta Mundi* 1(4): 206–208.
- *——— 1986b: The types of Flatidae (Homoptera) in the Stockholm Museum described by Stål, Melichar, Jacobi and Walker. *Entomologica Scandinavica* 17: 323–337.
- *——— 1986c: Types of Flatidae. I. Lectotype designations and taxonomic notes on species in Staatliches Museum für Tierkunde, Dresden. *Reichenbachia* 23(19): 107–113.
- *——— 1986d: Types of Flatidae (Homoptera) II. Lectotype designations and taxonomic notes on the species in the Genova Museum. *Annali del Museo Civico di Storia Naturale 'Giacomo Doria'* 85: 299–306.
- 1987: Types of Flatidae (Homoptera) XI. Taxonomic notes on Kirkaldy types in the Bishop

- Museum, with illustrations of the genitalia of male lectotypes. *Bishop Museum Occasional Papers* 27: 115–125.
- *—— 1988: Types of Flatidae (Homoptera) IX. Lectotype designations and three new genera for species in the Basel Museum. *Entomologia Basiliensis* 12: 83–91.
- 1989: New Guinea Flatidae (Homoptera) species collected on economic and other plants, with descriptions of new species. *Bishop Museum Bulletin of Entomology* 2: 1–79.
- *—— 1992: Types of Flatidae (Homoptera) XVI. A review of species in the Hamburg Museum with lectotype designations (Homoptera, Fulgoroidea). *Entomologische Mitteilungen aus dem Zoologisches Staatsinstitut und Zoologisches Museum Hamburg* 10: 175–186.
- 1999: Flatidae of Indonesia, exclusive of Irian Jaya (Homoptera, Fulgoroidea). *Zoologische Verhandlungen* 324: 1–88.
- 2001a: Flatidae of New Guinea and adjacent areas (Homoptera: Flatidae). *Bishop Museum Bulletin of Entomology* 8: 1–117.
- 2001b: Review of Flatidae in southern Africa, with keys and descriptions of new species (Homoptera, Fulgoroidea). *Contributions on Entomology, International* 4(4): 323–375.
- Melichar, L. 1898: Monographie der Ricaniiden (Homoptera). *Annalen des K. K. Naturhistorischen Hofmuseums Wien* 13: 197–359.
- 1902: Monographie der Acanoloniiden und Flatiden (Homoptera) (Fortsetzung). *Annalen des K. K. Naturhistorischen Hofmuseums Wien* 17: 1–123.
- 1903: Homopteren Fauna von Ceylon. F.L. Dames, Berlin. iv, 248 pp, 6 pls.
- Melville, R. 1979: Opinion 136. *Cicadetta strepitans* Kirkaldy, 1909 (Insecta: Homoptera) conserved. *Bulletin of Zoological Nomenclature* 36(2): 107–108.
- Metcalf, Z. P. 1936: Fascicle IV. Fulgoroidea. Part 2. Cixiidae. *General Catalogue of the Homoptera* 4(2): 1–269.
- 1943: Fascicle IV. Fulgoroidea. Part 3. Araeopidae (Delphacidae). *General Catalogue of the Homoptera* 4(3): 1–552.
- 1945: Fascicle IV. Fulgoroidea. Part 4. Derbidae. *General Catalogue of the Homoptera* 4(4): 1–252.
- 1946a: Homoptera. Fulgoroidea and Jassoidea of Guam. *Bulletin of the Bernice P. Bishop Museum* 189: 105–148.
- 1946b: Fascicle IV. Fulgoroidea. Part 8. Dictyopharidae. *General Catalogue of the Homoptera* 4(8): 1–246.
- 1948: Fascicle IV. Fulgoroidea. Part 10. Achilidae. *General Catalogue of the Homoptera* 4(10): 1–85.
- 1952: New names in the Homoptera. *Journal of the Washington Academy of Sciences* 42: 226–231.
- *—— 1955a: New names in the Homoptera. *Journal of the Washington Academy of Sciences* 45: 262–267.
- 1955b: Fascicle IV. Fulgoroidea. Part 16. Ricaniidae. *General Catalogue of the Homoptera* 4(16): 1–199.
- 1957: Fascicle IV. Fulgoroidea. Part 13. Flatidae and Hypochthonellidae. *General Catalogue of the Homoptera* 4(13): 1–565.
- *—— 1960: Fascicle VII. A bibliography of the Cercopoidea (Homoptera: Auchenorrhyncha). *General Catalogue of the Homoptera* 7: 1–262.
- 1962a: Fascicle VII. Cercopoidea. Part 3. Aphrophoridae. *General Catalogue of the Homoptera* 7(3): 1–600.
- 1962b: Fascicle VI. Cicadelloidea. Part 5. Ulopidae. *General Catalogue of the Homoptera* 6(5): 1–101.
- 1962c: Fascicle VI. Cicadelloidea. Part 4. Ledridae. *General Catalogue of the Homoptera* 6(4): 1–147.
- 1963a: Fascicle VIII. Cicadoidea, Part 1 (Cicadidae), Part 2 (Tibicinidae). *General catalogue of the Homoptera* 8(1–2): 1–930, 1–492.
- 1963b: Fascicle VI. Cicadelloidea. Part 8. Aphrodidae. *General Catalogue of the Homoptera* 6(8): 1–268.
- 1963c: Fascicle VI. Cicadelloidea. Part 9. Hecalidae. *General Catalogue of the Homoptera* 6(9): 1–123.
- *—— 1964: Fascicle VI. Cicadelloidea. Bibliography of the Cicadelloidea (Homoptera: Auchenorrhyncha). *General Catalogue of the Homoptera* 6 (Cicadelloidea): 1–349.
- 1966a. Fascicle VI. Cicadelloidea. Part 15. Iassidae. *General Catalogue of the Homoptera* 6(15): 1–229.
- 1966b. Fascicle VI. Cicadelloidea. Part 16. Idioceridae. *General Catalogue of the Homoptera* 6(16): 1–237.
- 1967a: Fascicle VI. Cicadelloidea. Part 10. Euscelidae. Section I. *General Catalogue of the Homoptera* 6(10): 1–1077.

- Metcalf, Z. P. 1967b: Fascicle VI. Cicadelloidea. Part 10. Euscelidae. Section II. *General Catalogue of the Homoptera* 6(10): 1078–2074.
- 1967c: Fascicle VI. Cicadelloidea. Part 10. Euscelidae. Section III. *General Catalogue of the Homoptera* 6(10): 2075–2695.
- 1968. Fascicle VI. Cicadelloidea. Part 17. Cicadellidae. *General Catalogue of the Homoptera* 6(17): 1–1513.
- ; Wade, V. 1963: Fascicle I. Supplement. A bibliography of Membracoidea and fossil Homoptera. *General Catalogue of the Homoptera* 1(Supplement): 1–200.
- ; Wade, V. 1965: Fascicle I. Supplement. Part 1. Membracidae Centrotinae Platybelinae Hoplophorioninae Darninae. *General Catalogue of the Homoptera* 1(Supplement): 1–743.
- Millar, I. 1998: Beneath the trees. *Newsletter of the Project Crimson Trust, Winter 1998*: 2 pp.
- *Moeed, A. 1975a: Food of skylarks and pipits, finches, and feral pigeons near Christchurch. *Notornis* 22(2): 135–142.
- *——— 1975b: Diets of nestling starlings and mynas at Havelock North, Hawke's Bay. *Notornis* 22(4): 291–294.
- Moir, M. L.; Majer, J. D.; Fletcher, M. J. 2003: New records for Hemiptera species in Western Australia. *Records of the Western Australian Museum* 21: 353–357.
- *Molloy, J.; Davis, A. 1992: Setting priorities for the conservation of New Zealand's threatened plants and animals. Department of Conservation, Wellington. 44 pp.
- ; ——— 1994: Setting priorities for the conservation of New Zealand's threatened plants and animals. 2nd edition. Collated by C. Tisdall. Department of Conservation, Wellington. 64 pp.
- *———; Bell, B.; Clout, M.; de Lange, P.; Gibbs, G.; Given, D.; Norton, D.; Smith, N.; Stephens, T. 2002: Classifying species according to threat of extinction—a system for New Zealand. *Threatened Species Occasional Publication* 22. Biodiversity Recovery Unit, Department of Conservation, Wellington. 26 pp. <http://www.doc.govt.nz/>
- *Montrouzier, X. 1861: Essai sur la faune entomologique de la Nouvelle-Calédonie (Balade) et des îles des Pins, Art, Lifu, etc. Hémiptères. *Annales de la Société Entomologique de France* 4(1): 59–74.
- Morrison, W. P. 1973: A revision of the Hecalinae (Homoptera: Cicadellidae) of the Oriental Region. *Pacific Insects* 15: 379–438.
- Motschulsky, V. I. 1859: Homoptères. In : 'Insectes des Indes orientales, et de contrées analogues'. *Etudes Entomologiques, rédigées par Victor de Motschulsky* 8: 25–118.
- Moulds, M. S. 1988: The status of *Cicadetta* and *Melampsalta* (Homoptera: Cicadidae) in Australia with the description of two new species. *General and Applied Entomology* 20: 39–48.
- 1990: Australian cicadas. Kensington: New South Wales University Press, Australia. 217 pp.
- 2005a: An appraisal of the higher classification of cicadas (Hemiptera: Cicadoidea) with special reference to the Australian fauna. *Records of the Australian Museum* 57(3): 375–446.
- *——— 2005b: Song analyses of cicadas of the genera *Aleeta* Moulds and *Tryella* Moulds (Hemiptera: Cicadidae). *Proceedings of the Linnaean Society of New South Wales* 126: 133–142.
- ; Carver, M. 1991: Superfamily Cicadoidea. Pp. 465–467. In: Division of Entomology, CSIRO, The Insects of Australia, 2nd edition. Melbourne University Press, Carlton. 2 vols; xviii + 1139 pp.
- Moulds, M. S.; Cowan, S. 2004: Hemiptera: Cicadoidea. *Australian Faunal Directory*. Viewed 4 April 2005. <http://www.deh.gov.au/biodiversity/abrs/online-resources/fauna/afd/index.html>
- Mühlethaler, R.; Burckhardt, D.; Lauterer, P.; Nagel, P. 2009: Taxonomy and biogeography of Central European *Kybos* (Insecta, Hemiptera, Cicadellidae). *Deutsche Entomologische Zeitschrift* 56(1): 14–40.
- Muir, F. 1913: On some new species of leafhopper. Part II Derbidae. *Bulletin of the Hawaiian Sugar Planters Association Division of Entomology* 12: 28–92.
- 1917: Homopterous notes. *Proceedings of the Hawaiian Entomological Society* 3: 311–338, plates 5–6.
- 1923a: Two species of Delphacidae (Homoptera) from Kermadec Archipelago. *Transactions of the New Zealand Institute* 54: 257.
- 1923b: New species of New Zealand Delphacidae (Homoptera). *Transactions of the New Zealand Institute* 54: 258–259.
- 1927: Hemiptera. Fulgoroidea. Part II. *Insects of Samoa and other Samoan Terrestrial Arthropoda* 1: 1–27.
- 1934: New and little-known Fulgoroidea (Homoptera). *Annals and Magazine of Natural History* 10(14): 561–586.
- ; Giffard, W. M. 1924: Studies in North American Delphacidae. *Bulletin of the Hawaiian Sugar Planters Association Division of Entomology* 15: 1–53.

- *Mulsant, M. E.; Rey, C. 1855: Description de quelques Hémiptères—Homoptères nouveaux ou peu connus. *Annales de la Société linnéenne de Lyon* 2(2): 197–249.
- Myers, J. G. 1921a: A revision of the New Zealand Cicadidae (Homoptera) with descriptions of new species. *Transactions and Proceedings of the New Zealand Institute* 53: 238–250.
- *——— 1921b: Notes on the Hemiptera of the Kermadec Islands, with an addition to the Hemiptera fauna of the New Zealand subregion. *Transactions and Proceedings of the New Zealand Institute* 53: 256–257.
- 1922a: The order Hemiptera in New Zealand. With special reference to its biological and economic aspects. *New Zealand Journal of Science and Technology* 5: 1–12.
- 1922b: Life-history of *Siphanta acuta* (Walk.), the large green plant-hopper. *New Zealand Journal of Science and Technology* 5: 256–263.
- 1923a: A contribution to the study of the New Zealand leaf-hoppers and plant-hoppers (Cicadellidae and Fulgoroidea). *Transactions and Proceedings of the New Zealand Institute* 54: 407–429.
- 1923b: New species of New Zealand Cicadidae. *Transactions and Proceedings of the New Zealand Institute* 54: 430–431.
- 1924a: The Hemiptera of the Chatham Islands. *Records of the Canterbury Museum* 2(4): 171–183.
- 1924b: The New Zealand plant-hoppers of the family Cixiidae (Homoptera). *Transactions and Proceedings of the New Zealand Institute* 55: 315–326, plates 20–24.
- 1926a: New or little-known Australasian cicadas of the genus *Melampsalta* with notes on songs by Iris Myers. *Psyche* 33(3): 61–76.
- *——— 1926b: Heteroptera in ocean drift. *Psyche* 33(4–5): 110–115.
- 1927: On the nomenclature of New Zealand Homoptera. Cicadidae, Jassoidea, Cixiidae and Coccidae. *Transactions and Proceedings of the New Zealand Institute* 57: 685–690.
- 1928a: A note on Australian typhlocybine leafhoppers, with a description of a new species. *Bulletin of Entomological Research* 18: 311–312.
- 1928b: Hemiptera. Cicadidae. Part II. *Insects of Samoa and other Samoan Terrestrial Arthropoda* 2: 55–80.
- *——— 1928c: The morphology of the Cicadidae (Homoptera). *Proceedings of the Zoological Society of London, 1928*: 365–472.
- *——— 1929a: Insect singers. A natural history of the cicadas. G. Routledge and Sons Ltd., London. 304 pp.
- 1929b: The taxonomy, phylogeny and distribution of New Zealand cicadas (Homoptera). *Transactions of the Royal Entomological Society of London* 77: 29–60.
- Myers, I.; Myers, J. G. 1924: The sound-organs and songs of New Zealand Cicadidae. *Report 16th Meeting Australasian Association for Advancement of Science (Wellington)*: 420–432.
- Narhardiyati, M.; Bailey, W. J. 2005: Biology and natural enemies of the leafhopper *Balclutha incisa* (Matsumura) (Hemiptera: Cicadellidae: Deltocephalinae) in south-western Australia. *Australian Journal of Entomology* 44(2): 104–109.
- Nast, J. 1972: Palaearctic Auchenorrhyncha (Homoptera). An annotated check list. Polish Academy of Sciences, Institute of Zoology, Warsaw, Poland. 550 pp.
- *Nast, J. 1979: Palaearctic Auchenorrhyncha (Homoptera). Part 2. Bibliography, Addenda and Corrigenda. *Annales Zoologici (Warsaw)* 34: 481–499.
- *——— 1987: The Auchenorrhyncha of Europe. *Annales Zoologici (Warsaw)* 40: 535–662.
- Naudé, T. J. 1926: Cicadellidae of South Africa, a taxonomic and faunistic study. *Union of South Africa Department of Agriculture and Forestry, Entomological Memoir* 4: 1–106.
- Nicholls, D. C.; Urquhart, E. M.; Ward, J. B.; Johns, P. M. 1998: A list of primary types held in Canterbury Museum, Christchurch, New Zealand. *Records of the Canterbury Museum* 12(2): 1–43.
- Nielson, M. W. 1968: The leafhopper vectors of phytopathogenic viruses (Homoptera, Cicadellidae). Taxonomy, Biology, and Virus Transmission. *United States Department of Agriculture Technical Bulletin* 1382: 1–386.
- Nielson, M. W. 1996: A new species of *Myerslopi* from Chile (Homoptera: Cicadellidae). *Entomological News* 107(5): 322–326.
- Oman, P. W. 1936: A generic revision of American Bythoscopininae and South American Jassininae. *University of Kansas Science Bulletin* 25(16): 343–420.
- 1943a: A new leafhopper from Oceania (Homoptera Cicadellidae). *Pan-Pacific Entomologist* 19(1): 33–34.
- 1943b: A generic revision of the Nearctic Cicadellidae (Homoptera). *Bulletin of the George Washington University* 1941–43: 15–17.

- Oman, P. W. 1949: The Nearctic leafhoppers (Homoptera; Cicadellidae). A generic classification and check list. *Memoirs of the Entomological Society of Washington* 3: 1–253.
- ; Knight, W. J.; Nielson, M. W. 1990: Leafhoppers (Cicadellidae). A Bibliography, Generic Check-list and Index to the World Literature 1956–1985. CAB International Institute of Entomology, Wallingford, England. 368 pp.
- Osborn, H. E. 1900. A neglected *Platymetopius*. *Entomological News* 11: 501–502.
- Osborn, H. 1934a: Hemiptera. Cicadellidae (Jassidae). Part II. *Insects of Samoa and other Samoan Terrestrial Arthropoda* 4: 163–194.
- 1934b: Cicadellidae of the Marquesas Islands. *Bulletin of the Bernice P. Bishop Museum* 114: 239–269.
- *Osborn, H.; Ball, E. D. 1902: A review of the North American species of *Athysanus* (Jassidae). *Ohio Naturalist* 2: 231–256.
- *Oshanin, V. T. 1906: Verzeichnis der palaearktischen Hemipteren mit besonderer Berücksichtigung ihrer Verteilung im Russischen Reiche. II. Band. Homoptera. I. Lieferung. *Annales du Musée Zoologique Impériale des Sciences, Saint-Petersbourg* 11: 1–192.
- *Ossiannilsson, F. 1981: The Auchenorrhyncha (Homoptera) of Fennoscandia and Denmark. Part 2: The families Cicadidae, Cercopidae, Membracidae, and Cicadellidae (exc. Deltocephalinae). *Fauna Entomologica Scandinavica* 7: 223–593.
- *——— 1983: The Auchenorrhyncha (Homoptera) of Fennoscandia and Denmark. Part 3: The family Cicadellidae: Deltocephalinae, catalogue of literature and index. *Fauna Entomologica Scandinavica* 7: 594–979.
- Palma, R. L.; Lovis, P. M.; Tither, C. 1989: An annotated list of primary types of the phyla Arthropoda (except Crustacea) and Tardigrada held in the National Museum of New Zealand. *Museum of New Zealand Miscellaneous Series No. 20*: 49 pp.
- Palmer-Jones, T.; Sutherland, M. D.; Paterson, C. R.; Harris, W. F.; Filmer, D. W. 1947: A recent outbreak of honey poisoning. *New Zealand Journal of Science and Technology* A29(3): 107–143.
- *Powlesland, R. G. 1980: Food-storing behaviour of the South Island robin. *Mauri Ora* 8: 11–20.
- *Ramsay, G. W. 1963: Predacious shield-bugs (Heteroptera: Pentatomidae) in New Zealand. *New Zealand Entomologist* 3(2): 3–6.
- Redak, R. A.; Purcell, A. H.; Lopes, J. R. S; Blua, M. J.; Mizell, R. F. III; Andersen, P. C. 2004: The biology of xylem fluid-feeding insect vectors of *Xylella fastidiosa* and their relation to disease epidemiology. *Annual Review of Entomology* 49: 243–270.
- *Ribaut, H. 1936: Homoptères Auchenorrhynches. I. (Typhlocybidae). *Faune de France* 31: 1–229.
- 1948: Démembrement de quelques genres de Jassidae. *Bulletin de la Société d'Histoire Naturelle de Toulouse* 83: 57–59.
- 1952: Homoptères Auchenorrhynques. II (Jassidae). *Faune de France* 57: 1–474.
- Ross, H. H. 1968: The evolution and dispersal of the grassland leafhopper genus *Exitianus*, with keys to the Old World species (Cicadellidae – Homoptera). *Bulletin of the British Museum (Natural History), Entomology* 22(1): 1–30.
- Royer, M. 1907: Remarques sur *Dorydium lanceolatum* Burm. (Hém., Hom.). *Bulletin de la Société entomologique de France* 1907: 29–30.
- Sahlberg, J. R. 1871: Öfersigt af Finlands och den Skandinaviska halföns Cicadariae. I. *Notiser ur Sällskapet pro Fauna et Flora Fennica Förfhandlingar* 9(12): 1–506.
- Salmon, J. T. 1950: Notes on synonymy among New Zealand insects – I. *Transactions of the Royal Society of New Zealand* 78(1): 1–2.
- Schmidt E. 1924: *Pseudaphrophora chilensis*, eine neue Cercopidengattung und Art von Chile. *Societas Entomologica. Organ für den internationalen Entomologenverein* 39: 43.
- Schrank, F. von P. 1776: Beyträge zur Naturgeschichte. Caspar Fritsch, Leipzig. 137 pp.
- Scott, R. R.; Emberson, R. M. (Compilers) 1999: Handbook of New Zealand Insect Names. Common and scientific names for insects and allied organisms. *Bulletin of the Entomological Society of New Zealand* 12: 97 pp.
- *Shcherbakov, D. E. 1981: Diagnostics of the families of the Auchenorrhyncha (Homoptera) on the basis of the wings. I. Forewing. *Entomological Review* 60: 64–81.
- *——— 1982: Diagnostics of the families of the Auchenorrhyncha (Homoptera) on the basis of the wings. II. Hindwing. *Entomological Review* 61: 70–78.
- *——— 1996: Origin and evolution of the Auchenorrhyncha as shown by the fossil record. Pp. 31–45. In: Schaefer, C.W. (ed.) Studies on Hemipteran Phylogeny. Entomological Society of America (Thomas Say Publications in Entomology), Lanham. iii, 244 pp.

- *Shcherbakov, D. E.; Fletcher, M. J.; Day, M. F. 2000: Ant attendance and nocturnal feeding of the leafhopper *Smicrocotis obscura* Kirkaldy (Hemiptera: Cicadellidae: Ledrinae). *Australian Entomologist* 27(2): 39–43.
- ; Popov, Yu. A. 2002: Hemiptera. Pp. 143–157 In: Rasnitsyn, A. P.; Quicke, D. L. J. (eds.): *History of Insects*. Kluwer Academic Publishers, Dordrecht. xii, 517 pp.
- Simon, C.; Cooley, J. R.; Hill, K. B. R.; Marshall D. C.; Goupil, B. 2003 (and updates): Electronic field guide to the cicadas of New Zealand. Selected New Zealand Species. http://hydrodictyon.eeb.uconn.edu/projects/cicada/sp_pages/species_NZ.html#New_Zealand
- Sohi, A. S.; Dworakowska, I. 1984: A review of Indian Typhlocybinæ (Homoptera : Cicadellidae) from India. *Oriental Insects* 17: 159–213.
- Sorenson, J. T.; Campbell, B. C.; Gill, R. J.; Steffen-Campbell, J. D. 1995: Non-monophyly of Auchenorrhyncha (“Homoptera”), based upon 18S rDNA phylogeny: eco-evolutionary and cladistic implications within Pre-Heteropteroidea Hemiptera (s.l.) and a proposal for new monophyletic suborders. *Pan-Pacific Entomologist* 71(1): 31–60.
- *Spiller, D.; Wise, K. A. J. (Revised and edited by Dale, P. S.; Maddison, P. A.). 1982: A catalogue (1860–1960) of New Zealand insects and their hostplants. *New Zealand Department of Science and Industrial Research Bulletin* 231: 260 pp.
- Stål, C. 1854: Nya Hemiptera. *Öfversigt af Kongliga Svenska Vetenskaps-Akademiens Förhandlingar* 11: 231–255.
- 1855: Hemiptera från Kafferlandet *Öfversigt af Kongliga Svenska Vetenskaps-Akademiens Förhandlingar* 12: 89–100.
- *——— 1859a: Hemiptera. Species novas descripsit. *Fregatten Eugenies Resa* 4: 219–298.
- 1859b: Novae quaedam Fulgorinorum formae speciesque insigniores. *Berliner Entomologische Zeitung* 3: 313–327.
- 1862a: Synonymiska och systematiska anteckningar öfver Hemiptera. *Öfversigt af Kongliga Svenska Vetenskaps-Akademiens Förhandlingar* 19: 479–504.
- 1862b: Novae vel minus cognitae Homopterorum formae et species. *Berliner Entomologische Zeitung* 6: 303–315.
- 1862c: Bidrag till Rio Janeiro-traktens Hemipterfauna II. *Kongliga Svenska Vetenskaps-Akademiens Handlingar* 3(6): 1–75.
- 1864: Hemiptera nonnulla nova vel minus cognita. *Annales de la Société entomologique de France* (4)4: 47–68.
- 1866a: Hemiptera Homoptera Latr. *Hemiptera Africana* 4: 1–276.
- 1866b: Analecta Hemipterologica. *Berliner Entomologische Zeitung* 10: 381–394.
- 1869: Bidrag till Membracidernas kannedom. *Öfversigt af Kongliga Svenska Vetenskaps-Akademiens Förhandlingar* 26: 231–300.
- Strumpel, V.H. 1972: Contribution to the phylogeny of Membracidae Rafinesque (Homoptera Auchenorrhyncha). *Zoologische Jahrbücher. Abteilung für Systematik, Ökologie und Geographie der Tiere* 99: 313–407.
- Syrett, P.; Smith, L. A. 1998: The insect fauna of four weedy *Hieracium* (Asteraceae) species in New Zealand. *New Zealand Journal of Zoology* 25: 73–83.
- Szwedo, J. 2002: Amber and amber inclusions of planthoppers, leafhoppers and their relatives (Hemiptera, Archaeorrhyncha et Clypaeorrhyncha). In: Holzinger, W.E. (ed.): *Zikaden. Leafhoppers, planthoppers and cicadas* (Insecta: Hemiptera: Auchenorrhyncha). *Denisia* 4: 37–56.
- 2002: Ulopidae of the Palaearctic – the state of the art (Hemiptera: Clypaeorrhyncha: Membracoidea) In: Holzinger, W. E. (ed.): *Zikaden. Leafhoppers, planthoppers and cicadas* (Insecta: Hemiptera: Auchenorrhyncha). *Denisia* 4: 249–262.
- 2004a: A new genus and six new species of ground-dwelling leafhoppers from Chile and New Zealand (Hemiptera: Cicadomorpha: Myerslopiidae). *Zootaxa* 424: 1–20.
- 2004b: An annotated checklist of Myerslopiidae with notes on the distribution and origin of the group (Hemiptera: Cicadomorpha). *Zootaxa* 425: 1–15.
- Teulon, D. A. J.; Penman, D. R. 1984: Spray timing for control of Froggatt’s apple leafhopper in Canterbury. *Proceedings 37th New Zealand Weed and Pest Control Conference*: 245–247.
- ; —— 1986a: Temporal distribution of Froggatt’s apple leafhopper (*Typhlocyba froggatti*) and the parasite *Anagrus armatus* (Ashmead) in an abandoned orchard. *New Zealand Journal of Zoology* 13: 93–100.
- ; —— 1986b: Sticky board sampling of leafhoppers (*Typhlocyba froggatti* Baker) in three apple orchards under different management regimes. *New Zealand Journal Agricultural Research* 29: 289–298.

- Teulon, D. A. J.; Penman, D. R. 1987: Vertical stratification of sticky board catches of leafhopper adults (Hemiptera: Cicadellidae) within apple orchards. *New Zealand Entomologist* 9: 100–103.
- Townsend, A. J.; de Lange, P. J.; Duffy, C. A. J.; Miskelly, C. M.; Molloy, J.; Norton, D. A. 2007: New Zealand Threat Classification System manual. Department of Conservation, Wellington. 35 pp. <http://www.doct.govt.nz>
- Turbott, E. G.; Woodward, T. E. 1954: The occurrence of *Achilus flammeus* Kirby in New Zealand (Homoptera; Fulgoroidea; Achilidae). *New Zealand Entomologist* 1(4): 25–27.
- Uhler, P. R. 1880: Remarks on a new form of Jassid. *American Entomologist* 3: 72–73.
- Urban, J. M.; Cryan, J. R. 2007: Evolution of the planthoppers (Insecta: Hemiptera: Fulgoroidea). *Molecular Phylogenetics and Evolution* 42: 556–572.
- Van Duzee, E. P. 1892: A synoptical arrangement of the genera of North American Jassidae, with descriptions of some new species. *Transactions of the American Entomological Society* 19: 295–307.
- *——— 1894: A catalogue of the described Jassoidea of North America. *Transactions of the American Entomological Society* 21: 245–317.
- Vilbaste, J. 1976: A revision of Homoptera–Cicadinea described by S. Matsumura from Europe and the Mediterranean area. *Eesti NSV Teaduste Akadeemia Toimetised* 25, *Biologia* 1: 25–36.
- *Wade, V. 1960: Species Index. Fascicle IV Fulgoroidea. *General Catalogue of the Homoptera* 4(Species Index): 1–78.
- *——— 1964: Species Index. Fascicle VIII Cicadoidea. *General Catalogue of the Homoptera* 8(Species Index): 1–26.
- Wagner, W. 1955: Neue Mitteleuropäische Zikaden und Blattflöhe (Homoptera). *Entomologische Mitteilungen, Hamburg* 6: 163–194.
- Walker, F. 1850: List of the specimens of Homopterous Insects in the Collection of the British Museum. Part 1, British Museum (Natural History), London. 1–260.
- 1851a: List of the specimens of Homopterous Insects in the Collection of the British Museum. Part 2, British Museum (Natural History), London. 261–636.
- 1851b: List of the specimens of Homopterous Insects in the Collection of the British Museum. Part 3, British Museum (Natural History), London. 637–907.
- 1857: Catalogue of the Homopterous insects collected at Singapore and Malacca by Mr A.R. Wallace, with descriptions of new species. *Journal of the Proceedings of the Linnean Society of London, Zoology* 1: 82–100.
- Walker, F. 1858a: List of the specimens of Homopterous Insects in the Collection of the British Museum. Supplement, British Museum (Natural History), London. 1–307.
- *——— 1858b: List of the specimens of Homopterous Insects in the Collection of the British Museum. Addenda, British Museum (Natural History), London. 308–369.
- 1858c: Homoptera. Insecta Saundersiana: or Characters of Undescribed Insects in the Collection of William Wilson Saunders Esq. British Museum (Natural History), London. 117 pp.
- 1862: Characters of undescribed species of Homoptera in the collection of F.P. Pascoe, F.L.S. *Journal of Entomology. Series A (A)1*: 303–319.
- Wallace, M. S.; Deitz, L. L. 2004: Phylogeny and systematics of the treehopper subfamily Centrotinae (Hemiptera: Membracidae). *Memoirs on Entomology, International Volume* 19: 1–377.
- ; ——— 2006: Australian treehoppers (Hemiptera: Membracidae: Centrotinae: Terentiini): phylogeny and biogeography. *Invertebrate Systematics* 20(2): 163–183.
- *Walsh, B. D. 1862: Fire blight. Two new foes of the apple and pear. *Prairie Farmer, new series* 10: 147–149.
- *Watson, R. N.; Townsend, R. J. 1981: Invertebrate pests on asparagus in Waikato. *Proceedings of the New Zealand Weed Pest Control Conference* 34: 70–75.
- Webb, M. D. 1976: A review of the genus *Idioscopus* Baker (Homoptera: Cicadellidae) in the Ethiopian region, with descriptions of twenty-seven new species and a comparison with the genus *Idiocerus* Lewis, *sensu* Ribaut (1952). *Journal of the Entomological Society of South Africa* 39(2): 291–331.
- 1983: Revision of the Australian Idiocerinae (Hemiptera: Homoptera: Cicadellidae). *Australian Journal of Zoology Supplementary Series* 92: 1–147.
- ; Viraktamath, C. A. 2009: Annotated check-list, generic key and new species of Old World Deltocephalini leafhoppers with nomenclatorial

- changes in the *Deltocephalus* group and other Deltocephalinae (Hemiptera, Auchenorrhyncha, Cicadellidae). *Zootaxa* 2163: 1–64.
- *Weintraub, P. G.; Beanland, L. 2006: Insect vectors of phytoplasmas. *Annual Review of Entomology* 51: 91–111.
- *White, E. G.; Sedcole, J. R. 1993: A study of the abundance and patchiness of cicada nymphs (Homoptera: Tibicinidae) in a New Zealand subalpine shrub-grassland. *New Zealand Journal of Zoology* 20(1): 38–51.
- *———; —— 1993: Spatio-temporal cicada ecology: a rebuttal of alleged flaws. *New Zealand Journal of Zoology* 20(1): 59–62.
- White, F. B. 1879: List of Hemiptera of New Zealand. *Entomologist's Monthly Magazine* 15: 213–220.
- Whitten, M. J. 1965: Chromosome numbers in some Australian leafhoppers (Homoptera, Auchenorrhyncha). *Proceedings of the Linnean Society of New South Wales* 90(1): 78–85.
- ; Taylor, W. C. 1969: Chromosomal polymorphism in an Australian leafhopper (Homoptera: Cicadellidae). *Chromosoma* 26(1): 1–6.
- Wilson, M. R.; Claridge, M. F. 1991: Handbook for the identification of Leafhoppers and Planthoppers of Rice. CAB International For International Institute of Entomology, in association with Natural Resources Institute, London. 142 pp.
- Wilson, S. W. 2005: Keys to the families of Fulgoromorpha with emphasis on planthoppers of potential economic importance in the southeastern United States (Hemiptera: Auchenorrhyncha). *Florida Entomologist* 88(4): 464–481.
- *Winstanley, W. J. 1978: The food of tunnel web spiders (*Porrhothele antipodiana*) at Lake Pounui. *Weta* 2(1): 11.
- Wise, K. A. J. 1977: A synonymic checklist of the Hexapoda of the New Zealand sub-region: the smaller orders. *Bulletin of the Auckland Institute and Museum* 11: 1–176.
- Wood, G. A.; Andersen, M. T.; Forster, R. L. S.; Braithwaite, M.; Hall, H. K. 1999: History of boysenberry and youngberry in New Zealand in relation to their problems with boysenberry decline, the association of a fungal pathogen, and possibly a phytoplasma, with this disease. *New Zealand Journal of Crop and Horticultural Science* 27: 281–295.
- *Yang, C.-T.; Chang, T.-Y. 2000: The external male genitalia of Hemiptera (Homoptera - Heteroptera). Shih Way Publishers, Taichung, Taiwan. 746 pp.
- *Yeh, W. B.; Yang, C. T.; Hui, C. F. 2005: A molecular phylogeny of planthoppers (Hemiptera: Fulgoroidea) inferred from mitochondrial 16S rDNA sequences. *Zoological Studies* 44(4): 519–535.
- Yoshizawa, K.; Saigusa, T. 2001: Phylogenetic analysis of paraneopteran orders (Insecta : Neoptera) based on forewing base structure, with comments on monophyly of Auchenorrhyncha (Hemiptera). *Systematic Entomology* 26(1): 1–13.
- Young, D. A. 1952: A reclassification of Western Hemisphere Typhlocybinae (Homoptera, Cicadellidae). *University of Kansas Science Bulletin* 35: 1–217.
- *Young, D. 1972: Analysis of songs of some Australian cicadas (Homoptera: Cicadidae). *Journal of the Australian Entomological Society* 11: 237–243.
- Yurtsever, S. 2000: Inheritance of the two dorsal colour/pattern phenotypes in New Zealand populations of the polymorphic meadow spittlebug *Philaenus spumarius* (L.) (Homoptera: Cercopidae). *Journal of the Royal Society of New Zealand* 30(4): 411–418.
- 2002: Hybrid crosses of the meadow spittlebug *Philaenus spumarius* (L.) (Homoptera: Cercopidae) between New Zealand and Welsh populations. *New Zealand Journal of Zoology* 29: 245–251.
- Zachvatkin, A. A. 1929: Description d'une nouvelle espèce du genre *Edwardsiana* Jaz. 1929 (Homoptera, Eupterygidae) des environs de Moscou. *Revue Russe d'Entomologie* 23: 262–265.
- 1935: Notes on the Homoptera-Cicadina of Jemen. *Wissenschaftliche Berichte Moskauer Staatsuniversität* 4: 106–115.
- 1947: Homoptera Cicadina from north-western Persia. I. *Revue d'Entomologie de l'URSS* 28: 106–115.
- Zimmerman, E. C. 1948: Homoptera: Auchenorrhyncha. *Insects of Hawaii* 4: 1–268.

Appendix A. Glossary

- adventive** — not native; an organism not originating or not naturally occurring in a geographically defined area in which it is found.
- alpine** — of or pertaining to land located above the subalpine zone, characterised by grasslands, herb fields and scree, and reaching up to the summer snow line.
- altitudinal distribution** — distribution related to altitude, i.e., lowland, montane, subalpine, alpine.
- arboreal** — living on trees and shrubs.
- biostatus** — the status of an organism based on its geographic region relative to its occurrence in a particular region, e.g., endemic, native (or indigenous), adventive.
- brachypterous** — having forewings reaching one-third to two-thirds of abdomen length, the appendix (apical membrane) absent or reduced, and the hindwings as long as or substantially shorter than the forewings.
- coastal** — of or pertaining to the strip of land within the influence of the sea.
- endemic** — restricted to a geographic area.
- epigean** — living on the surface of the ground.
- extralimital range** — distribution of an organism outside the limits of a specific geographic area (e.g., outside New Zealand).
- family** — a category in the taxonomic hierarchy, that includes one or more genera or tribes of common phylogenetic origin, separated from other such groups by a decided evolutionary gap.
- family-group** — any category in the taxonomic hierarchy from family to tribe, including intermediate categories (e.g., family, subfamily, tribe).
- fungivore** (mycetophagous) — feeding on fungi.
- genus** — a category in the taxonomic hierarchy, that includes one or more phylogenetically related and, usually, morphologically similar species.
- genus-group** — the category of genus or subgenus in the taxonomic hierarchy.
- geographic distribution** — distribution related to geography, i.e., districts, regions.
- gumland** — shrub-covered, flat to rolling land in northernmost New Zealand, with deposits of kauri (*Agathis australis*) gum.
- holotype** or **type** — the single specimen designated or indicated as the type specimen of a species by the original author at the time of publication or the only specimen on which the original description was based.
- hostplant** — the plant on which a living organism breeds, develops and feeds.
- indigenous** — see native.
- lectotype** — type specimen selected from the syntypes by a subsequent author in the absence of a holotype.
- lowland** — of or pertaining to land located below the montane zone and generally reaching up to the limit of rimu (*Dacrydium cupressinum*), e.g., about 500 m in central New Zealand.
- macropterous** — having both pairs of wings of approximately equal length, more or less reaching apex of abdomen.
- mesophyll** — parenchyma that makes up most of the interior of a plant leaf between its upper and lower outer layers.
- micropterous** — displaying an extreme form of brachyptery, with vestigial hindwings (reduced to small pads or membranous lobes).
- monotypy** — the situation when a nominal genus or subgenus is established on the basis of a single species (the type species by monotypy) also the situation when a holotype exists through recognition that the original author based a species on a single specimen.
- montane** — of or pertaining to land located above the lowland zone and reaching up to the tree line.
- native** — an organism originating or naturally occurring in a geographically defined area in which it is found.
- neotype** — a newly designated name-bearing type specimen when the original type or holotype is lost or destroyed.
- new name** — a new name proposed to replace an earlier preoccupied name; replacement name.
- original designation** — the situation when the type of a taxon (genus, subgenus or species) is designated at the same time as the taxon is established (the type species, or holotype, by original designation).

parenchyma — the functional living tissue that makes up the bulk of most non-woody structures in plants.

phloem — one of two primary components of vascular tissue of plants, the other being xylem; the principal food-, predominantly sucrose-, conducting tissue.

phytophagous — feeding on plant material.

planticolous — living on plants other than trees or shrubs.

preoccupied name — a name already in use for another taxon based on a different type specimen.

replacement name — see new name.

scree — accumulation of loose stones on a slope.

scrub — vegetation consisting of stunted trees, bushes, and other plants.

scrubland — vegetation unit with dense cover less than 2 metres tall; area or land covered with scrub vegetation.

seasonality — period of the year when an animal is active.

sensu lato (Latin) — in the broad sense.

sensu stricto (Latin) — in the strict or narrow sense.

shrubland — vegetation unit with sparse or moderate cover and often taller than 2 metres.

species — a taxon of the rank of species, the category below the genus in the taxonomic hierarchy; naturally occurring populations with a common heredity; groups of actually or potentially interbreeding populations which are reproductively isolated from other such groups.

species-group — the category of species or subspecies in the taxonomic hierarchy.

subalpine — of or pertaining to land located above the tree line and characterised by a mountain shrubland (e.g., of *Olearia*, *Brachyglottis*, and *Dracophyllum*).

submacropterous — having the hindwings visibly shorter than the forewings, and the forewings less developed than those of true macropterous individuals, reaching more than two-thirds of abdomen length.

subnival — of or pertaining to land within the immediate influence of summer snowline/persistent snow/ice-fields.

subspecies — a taxon of the rank of subspecies; group of naturally interbreeding populations that differs morphologically and is often isolated from other such groups, but can still interbreed with these groups in the zone of geographic overlap.

synonym — one of two or more scientific names applied to a taxon.

syntype — any of two or more specimens on which the original description of a taxon was based when a holotype was not designated.

Taupo Line — a line across the North Island at the level of Lake Taupo (about 39°S), dividing the island into upper and lower biogeographic regions (see Gibbs, 2006).

taxon (plural, **taxa**) — a taxonomic grouping of any rank (e.g., a family, a genus, a species) including all its subordinate groups.

teneral — a new or young adult, recently emerged, sexually mature, with softer or paler exoskeleton.

type or **name-bearing type** — the specimen(s), species or genus that serves as the objective standard of reference determining the application of a name to a taxon.

type locality — the precise geographical site where the type of a species or subspecies was collected.

type species — the species designated as the type of a genus or subgenus.

type specimen — a specimen (e.g., holotype, lectotype, neotype) or one of a series of specimens (syntypes) designated as the type of a species or subspecies.

valid name — the name for a particular taxon, that is correct according to the provisions of the International Code of Zoological Nomenclature.

xylem — one of two primary components of vascular tissue of plants, the other being phloem; the principal water-conducting tissue.

Appendix B. Plants associated with Auchenorrhyncha in New Zealand.

Previous *Cassinia* records (except *C. aculeata*) are now referred to under *Ozothamnus leptophyllus*. * = Exotic plants; # = Genus may include exotic, cultivated exotic or native species; [] = Plants absent from New Zealand; — = No information.

Scientific name	Common name	Family name
* <i>Acacia</i>	acacia, wattle	Mimosaceae
* <i>Acacia armata</i> = <i>A. paradoxa</i>	kangaroo acacia	Mimosaceae
* <i>Acacia decurrens</i>	early black/green wattle	Mimosaceae
<i>Acaena novae-zelandiae</i>	red bidibid	Rosaceae
<i>Aciphylla</i>	speargrass, karamea	Apiaceae
<i>Aciphylla aurea</i>	golden speargrass	Apiaceae
<i>Aciphylla colensoi</i>	giant speargrass, taramea	Apiaceae
* <i>Actinidia deliciosa</i>	kiwifruit	Actinidiaceae
* <i>Aesculus hippocastanum</i>	horse chestnut	Hippocastanaceae
<i>Agathis australis</i>	kauri	Araucariaceae
* <i>Agave</i>	agave	Agavaceae
* <i>Ageratum</i>	—	Asteraceae
* <i>Ageratum conyzoides</i>	billygoat-weed, chickweed	Asteraceae
* <i>Agrostis tenuis</i>	—	Poaceae
* <i>Alcea</i>	hollyhock	Malvaceae
* <i>Alcea rosea</i>	hollyhock	Malvaceae
* <i>Alnus</i>	alder	Betulaceae
* <i>Alnus glutinosa</i>	European alder	Betulaceae
<i>Apodasmia similis</i>	jointed wire rush, oioi	Restionaceae
* <i>Arctotis stoechadifolia</i>	blue-eyed African daisy	Asteraceae
<i>Aristotelia fruticosa</i>	mountain wineberry	Elaeocarpaceae
<i>Ascarina lucida</i>	hutu	Chloranthaceae
<i>Astelia</i>	mauri	Liliaceae
<i>Astelia banksii</i>	horahora, coastal astelia	Liliaceae
<i>Avicennia</i>	mangrove, manawa	Verbenaceae
<i>Beilschmiedia tarairi</i>	taraire	Lauraceae
* <i>Berberis</i>	barberry	Berberidaceae
* <i>Betula</i>	birch	Betulaceae
* <i>Betula alba</i>	white birch	Betulaceae
<i>Blechnum</i>	kiokio, hard fern	Blechnaceae
<i>Blechnum capense</i>	—	Blechnaceae
<i>Blechnum penna-marina</i>	alpine hard/water fern	Blechnaceae
<i>Brachyglottis buchananii</i>	—	Asteraceae
<i>Brachyglottis cassinioides</i>	—	Asteraceae
<i>Brachyglottis elaeagnifolius</i>	—	Asteraceae
<i>Brachyglottis huntii</i>	rautini	Asteraceae
* <i>Brassica rapa</i>	turnip	Brassicaceae
* <i>Cajanus</i>	pigeonpea	Fabaceae
<i>Calystegia soldanella</i>	shore bindweed, panahi	Convolvulaceae
* <i>Carex</i>	sedge, makura	Cyperaceae
<i>Carmichaelia</i>	neinei	Fabaceae
<i>Carpodetus serratus</i>	putaputaweta	Grossulariaceae
<i>Cassinia</i>	—	Asteraceae
<i>Cassinia leptophylla</i> = <i>Ozothamnus leptophyllus</i>	cottonwood, tauhinu	Asteraceae
<i>Cassinia retorta</i> = <i>O. leptophyllus</i>	—	Asteraceae

<i>Cassinia vauvilliersii</i> = <i>O. leptophyllus</i>	—	Asteraceae
* <i>Casuarina</i>	she-oak	Casuarinaceae
<i>Celmisia</i>	—	Asteraceae
<i>Celmisia discolor</i>	—	Asteraceae
<i>Celmisia lyallii</i>	false Spaniard	Asteraceae
<i>Celmisia ramulosa</i>	—	Asteraceae
<i>Celmisia sessiliflora</i>	white cushion mountain daisy	Asteraceae
<i>Celmisia viscosa</i>	snow mountain daisy	Asteraceae
<i>Chionochloa</i>	snow grass, snow tussock	Poaceae
<i>Chionochloa australis</i>	carpet grass, haumata	Poaceae
<i>Chionochloa rubra</i>	red tussock	Poaceae
* <i>Chrysanthemoides</i> <i>monilifera</i>	boneseed	Asteraceae
* <i>Cirsium arvense</i>	Californian thistle	Asteraceae
* <i>Citrus aurantifolia</i>	lime	Rutaceae
* <i>Citrus limon</i>	lemon	Rutaceae
<i>Clianthus</i>	glory pea, kaka beak	Fabaceae
<i>Collospermum</i>	—	Liliaceae
# <i>Convolvulus</i>	—	Convolvulaceae
<i>Coprosma</i>	coprosma	Rubiaceae
<i>Coprosma chathamica</i>	—	Rubiaceae
<i>Coprosma lucida</i>	kakaramu, shining karamu	Rubiaceae
<i>Coprosma macrocarpa</i>	kakaramu, large seeded coprosma	Rubiaceae
<i>Coprosma parviflora</i>	leafy coprosma	Rubiaceae
<i>Coprosma propinqua</i>	miki, mingimingi	Rubiaceae
<i>Coprosma repens</i>	angiangi	Rubiaceae
<i>Coprosma rhamnoides</i>	—	Rubiaceae
<i>Coprosma robusta</i>	kakaramu, glossy karamu	Rubiaceae
<i>Coriaria</i>	tupakihi, tutu	Coriariaceae
<i>Coriaria arborea</i>	pohou, tree tutu	Coriariaceae
* <i>Cornus capitata</i>	Himalayan strawberry tree	Cornaceae
<i>Corokia</i>	corokia	Cornaceae
* <i>Cortaderia</i>	pampas grass, toetoe	Poaceae
<i>Cortaderia fulvida</i>	toetoe	Poaceae
<i>Corynocarpus</i>	karaka nut, karaka	Corynocarpaceae
* <i>Cotoneaster</i>	cotoneaster, rockspray	Rosaceae
<i>Cotula</i>	bachelor's buttons	Asteraceae
* <i>Crataegus</i>	hawthorn	Rosaceae
<i>Cyathea</i>	—	Cyatheaceae
<i>Cyathodes</i> = <i>Leucopogon/Leptecophylla</i>	—	Epacridaceae
<i>Cyathodes fasciculata</i> = <i>Leucopogon fasciculatus</i>	tall mingimingi	Epacridaceae
<i>Cyathodes juniperina</i> = <i>Leptecophylla juniperina</i>	mingimingi	Epacridaceae
* <i>Cynodon</i>	—	Poaceae
* <i>Cynodon dactylon</i>	Indian doab	Poaceae
[<i>Cyperus ferax</i>]	—	Cyperaceae
* <i>Cytisus</i>	broom	Fabaceae
<i>Dacrycarpus dacrydioides</i>	white pine, kahikatea	Podocarpaceae
<i>Dacrydium</i>	—	Podocarpaceae
<i>Dacrydium cupressinum</i>	rimu	Podocarpaceae

* <i>Dactylis glomerata</i>	cocksfoot	Poaceae
* <i>Dahlia</i>	dahlia	Asteraceae
* <i>Daucus carota</i>	carrot and wild carrot	Apiaceae
* <i>Digitaria henryi</i>	—	Poaceae
* <i>Digitaria sanguinalis</i>	summer grass	Poaceae
<i>Discaria</i>	—	Rhamnaceae
<i>Discaria toumatou</i>	matagouri	Rhamnaceae
<i>Dolichoglottis lyallii</i>	—	Asteraceae
<i>Dracophyllum</i>	neinei, grass tree	Epacridaceae
<i>Dracophyllum longifolium</i>	inaka, inanga	Epacridaceae
<i>Dracophyllum subulatum</i>	monoao	Epacridaceae
<i>Dracophyllum traversii</i>	neinei, large/mountain neinei	Epacridaceae
<i>Drapetes</i>	—	Thymelaeaceae
= <i>Kelleria</i>		
<i>Dryopteris pennigera</i>	feather fern, pakau	Dryopteridaceae
= <i>Pneumatopteris pennigera</i>		
<i>Dysoxylum spectabile</i>	koekohe	Meliaceae
[<i>Ehrharta longiflora</i>]	annual veldtgrass	Poaceae
<i>Elatostema rugosum</i>	parataniwha	Urticaceae
<i>Empodisma minus</i>	wire rush	Restionaceae
<i>Entelea</i>	—	Tiliaceae
* <i>Epilobium</i>	willowherb	Onagraceae
* <i>Erigeron</i>	fleabane	Asteraceae
[<i>Eriochloa subglabra</i>]	aleman grass	Poaceae
* <i>Escallonia</i>	escallonia	Grossulariaceae
* <i>Eucalyptus</i>	eucalypt, gum tree	Myrtaceae
* <i>Fragaria x ananassa</i>	strawberry	Rosaceae
* <i>Fuchsia</i>	fuchsia	Onagraceae
* <i>Gardenia</i>	—	Rubiaceae
<i>Gaultheria</i>	snowberry, koropuka	Ericaceae
<i>Geniostoma</i>	—	Loganiaceae
* <i>Geranium</i>	cranesbill, geranium	Geraniaceae
<i>Griselinia</i>	—	Cornaceae
<i>Halocarpus biformis</i>	pink pine, yellow pine	Podocarpaceae
<i>Halocarpus kirkii</i>	manoao	Podocarpaceae
<i>Hebe</i>	hebe, koromiko	Scrophulariaceae
<i>Hebe bollonsii</i>	—	Scrophulariaceae
<i>Hebe divaricata</i>	—	Scrophulariaceae
<i>Hebe elliptica</i>	shore hebe, kokomuka	Scrophulariaceae
<i>Hebe odora</i>	—	Scrophulariaceae
<i>Hebe parviflora</i>	koromiko taranga	Scrophulariaceae
<i>Hebe rakaiensis</i>	—	Scrophulariaceae
<i>Hebe salicifolia</i>	koromiko	Scrophulariaceae
<i>Hebe stricta</i>	koromiko	Scrophulariaceae
<i>Hebe subalpina</i>	—	Scrophulariaceae
* <i>Helianthus</i>	sunflower	Asteraceae
<i>Helichrysum bellidioides</i>	hells bells	Asteraceae
= <i>Anaphalioides bellidioides</i>		
* <i>Hieracium</i>	hawkweed	Asteraceae
* <i>Hieracium caespitosum</i>	field hawkweed	Asteraceae
* <i>Hieracium lepidulum</i>	tussock hawkweed	Asteraceae
* <i>Hieracium pilosella</i>	mouse-ear hawkweed	Asteraceae
* <i>Hieracium praealtum</i>	king devil	Asteraceae

<i>Hoheria</i>	ribbonwood, houhere	Malvaceae
<i>Hoheria glabrata</i>	houhere	Malvaceae
<i>Imperata</i>	—	Poaceae
* <i>Ipomoea batatas</i>	sweet potato, yam	Convolvulaceae
# <i>Juncus</i>	rush, kopungawha	Juncaceae
<i>Knightia excelsa</i>	rewarewa	Proteaceae
<i>Kunzea ericoides</i>	kanuka	Myrtaceae
* <i>Kyllingia</i>	kyllingia	Cyperaceae
= <i>Cyperus kyllingia</i>		
* <i>Lathyrus latifolius</i>	everlasting pea	Fabaceae
* <i>Lavandula</i>	lavender	Lamiaceae
<i>Lepidium oleraceum</i>	cook's scurvy grass, heketara	Brassicaceae
* <i>Leptocarpus</i> (NZ records)	—	Restionaceae
= <i>Apodasmia</i>		
<i>Leptocarpus similis</i>	jointed wire rush, oioi	Restionaceae
= <i>Apodasmia similis</i>		
* <i>Leptocarpus simplex</i>	—	Restionaceae
(NZ records)		
= <i>Apodasmia similis</i>		
# <i>Leptospermum</i>	tea tree	Myrtaceae
<i>Leptospermum scoparium</i>	tea tree, manuka	Myrtaceae
* <i>Lotus major</i>	birdsfoot trefoil	Fabaceae
<i>Macropiper excelsum</i>	pepper tree, kawakawa	Piperaceae
* <i>Magnolia</i>	magnolia	Magnoliaceae
* <i>Malus</i>	apple	Rosaceae
<i>Mariscus</i>	—	Cyperaceae
= <i>Cyperus</i>		
* <i>Marrubium vulgare</i>	horehound	Lamiaceae
* <i>Medicago sativa</i>	lucerne, alfalfa	Fabaceae
<i>Melicytus</i>	mahoe	Violaceae
<i>Melicytus chathamicus</i>	Chatham Island mahoe	Violaceae
<i>Melicytus ramiflorus</i>	mahoe	Violaceae
* <i>Melissa officinalis</i>	lemon balm	Lamiaceae
* <i>Mentha</i>	mint	Lamiaceae
<i>Meryta</i>	—	Araliaceae
<i>Meryta sinclairii</i>	puka, pukanui	Araliaceae
# <i>Metrosideros</i>	rata	Myrtaceae
<i>Metrosideros excelsa</i>	pohutukawa	Myrtaceae
<i>Metrosideros kermadecensis</i>	Kermadec pohutukawa	Myrtaceae
<i>Metrosideros perforata</i>	clinging rata, aka	Myrtaceae
<i>Muehlenbeckia</i>	pohuehue	Polygonaceae
<i>Muehlenbeckia australis</i>	pohuehue	Polygonaceae
* <i>Musa</i>	banana	Musaceae
# <i>Myoporum</i>	—	Myoporaceae
<i>Myoporum laetum</i>	ngaio	Myoporaceae
<i>Myrsine</i>	mapou	Myrsinaceae
* <i>Nepeta faassenii</i>	cat-mint	Lamiaceae
* <i>Nicotiana tabacum</i>	tobacco	Solanaceae
# <i>Nothofagus</i>	southern beech, tawai	Nothofagaceae
<i>Nothofagus fusca</i> var.	—	Nothofagaceae
<i>colensoi</i> = <i>N. truncata</i>		

<i>Nothofagus fusca</i>	hutu, red beech	Nothofagaceae
<i>Nothofagus menziesii</i>	tawhai, silver beech	Nothofagaceae
<i>Nothofagus solandri</i>	tawhai rauriki, black beech	Nothofagaceae
<i>Nothofagus solandri</i> var. <i>cliffortioides</i>	tawhai rauriki, mountain beech	Nothofagaceae
<i>Olearia</i>	tree daisy, akeake	Asteraceae
<i>Olearia arborescens</i>	tree daisy	Asteraceae
<i>Olearia avicenniifolia</i>	akeake	Asteraceae
<i>Olearia colensoi</i>	tupare	Asteraceae
<i>Olearia ilicifolia</i>	hakeke	Asteraceae
<i>Olearia lacunosa</i>	lancewood tree daisy	Asteraceae
<i>Olearia moschata</i>	musky tree daisy	Asteraceae
<i>Olearia solandri</i>	coastal tree daisy	Asteraceae
<i>Olearia virgata</i>	twiggy tree daisy	Asteraceae
* <i>Oryza</i>	rice	Poaceae
* <i>Oryza sativa</i>	rice	Poaceae
* <i>Oxalis debilis</i>	pink shamrock	Oxalidaceae
<i>Ozothamnus</i>	—	Asteraceae
<i>Ozothamnus leptophyllus</i>	cottonwood, tauhinu	Asteraceae
[<i>Panicum barbinode</i>]	paragrass	Poaceae
* <i>Paspalum</i>	—	Poaceae
* <i>Pennisetum</i>	—	Poaceae
* <i>Pennisetum clandestinum</i>	kikuyu grass	Poaceae
<i>Phormium</i>	flax, NZ flax	Agavaceae
<i>Phormium tenax</i>	flax, harakeke	Agavaceae
<i>Phyllocladus alpinus</i>	mountain celery pine, toatoa	Phyllocladaceae
<i>Pimelea</i>	rice flower	Thymelaceae
<i>Pittosporum</i>	pittosporum, kohukohu	Pittosporaceae
<i>Pittosporum eugenoides</i>	tarata	Pittosporaceae
<i>Plagianthus</i>	—	Malvaceae
<i>Plagianthus betulinus</i> = <i>P. regius</i>	lowland ribbonwood, houi	Malvaceae
<i>Plagianthus divaricatus</i>	marsh ribbonwood, houi	Malvaceae
<i>Poa anceps</i>	broad-leaved poa	Poaceae
<i>Poa cita</i>	silver tussock, wi	Poaceae
* <i>Podocarpus</i>	—	Podocarpaceae
<i>Podocarpus nivalis</i>	tauhinu, snow totara	Podocarpaceae
<i>Podocarpus totara</i>	totara	Podocarpaceae
<i>Polystichum aculeatum</i>	—	Dryopteridaceae
<i>Polystichum vestitum</i>	punui	Dryopteridaceae
* <i>Populus</i>	poplar	Salicaceae
* <i>Populus alba</i>	silver poplar, white poplar	Salicaceae
* <i>Populus deltoides</i>	cottonwood, necklace poplar	Salicaceae
* <i>Populus nigra</i>	lombardy poplar	Salicaceae
* <i>Populus nigra</i> 'Italica'	—	Salicaceae
<i>Prumnopitys ferruginea</i>	miro	Podocarpaceae
<i>Pseudopanax</i>	—	Araliaceae
<i>Pseudopanax crassifolius</i>	horoeka	Araliaceae
<i>Pseudopanax lessonii</i>	houpara	Araliaceae
<i>Pseudopanax simplex</i> = <i>Raukaua simplex</i>	haumakaroa	Araliaceae
<i>Pseudowintera</i>	—	Winteraceae
<i>Pteridium</i>	—	Dennstaedtiaceae
<i>Pteridium aquilinum</i> = <i>P. esculentum</i>	bracken fern	Dennstaedtiaceae
* <i>Quercus</i>	oak	Fagaceae

<i>Raoulia</i>	mat daisy, vegetable sheep	Asteraceae
<i>Raoulia eximia</i>	vegetable sheep, tutahuna	Asteraceae
<i>Raukawa edgerleyi</i>	rauikawa	Araliaceae
<i>Rhopalostylis sapida</i>	nikau	Arecaceae
* <i>Rosmarinus officinalis</i>	rosemary	Lamiaceae
<i>Rubus australis</i>	tataramoa	Rosaceae
* <i>Rubus fruticosus</i>	blackberry	Rosaceae
* <i>Rubus idaeus</i>	raspberry	Rosaceae
* <i>Rubus ursinus</i>	California blackberry	Rosaceae
* <i>Saccharum</i>	sugarcane	Poaceae
<i>Salicornia</i>	—	Chenopodiaceae
= <i>Sarcocornia</i>		
* <i>Salix</i>	willow	Salicaceae
* <i>Salvia officinalis</i>	sage	Lamiaceae
* <i>Salvia sclarea</i>	clary, clary sage	Lamiaceae
* <i>Sambucus 'Aurea'</i>	Golden Elder	Caprifoliaceae
<i>Scaevola gracilis</i>	—	Goodeniaceae
<i>Schefflera digitata</i>	pate	Araliaceae
<i>Scirpus</i>	sedge	Cyperaceae
<i>Scirpus fluviatilis</i>	marsh clubrush, kopungawha	Cyperaceae
= <i>Bolboschoenus fluviatilis</i>		
<i>Scirpus frondosus</i>	pingao	Cyperaceae
= <i>Desmoschoenus spiralis</i>		
# <i>Senecio</i>	—	Asteraceae
* <i>Senecio elegans</i>	purple groundsel	Asteraceae
* <i>Senecio mikanoides</i>	German ivy	Asteraceae
<i>Senecio minimus</i>	fireweed	Asteraceae
# <i>Solanum</i>	nightshade	Solanaceae
<i>Solanum aviculare</i>	bullibul, poroporo	Solanaceae
* <i>Solanum tuberosum</i>	potato	Solanaceae
# <i>Sonchus</i>	sowthistle, manga	Asteraceae
<i>Sphagnum</i>	sphagnum moss	Sphagnaceae
* <i>Spiraea japonica</i>	—	Rosaceae
* <i>Spiraea ulmaria</i>	meadowsweet	Rosaceae
* <i>Sporobolus</i>	—	Poaceae
* <i>Stellaria media</i>	chickweed, kohukohu	Caryophyllaceae
* <i>Stenotaphrum glabrum</i>	buffalo grass	Poaceae
* <i>Syringa vulgaris</i>	lilac	Oleaceae
* <i>Tabebuia</i>	ipê	Bignoniaceae
* <i>Tecoma</i>	trumpet bush, yellow bells	Bignoniaceae
* <i>Teline monspessulana</i>	Montpellier broom	Fabaceae
* <i>Trifolium</i>	clover, trefoil	Fabaceae
* <i>Trifolium pratense</i>	red clover	Fabaceae
* <i>Ulex europaeus</i>	gorse	Fabaceae
<i>Uncinia</i>	—	Cyperaceae
<i>Urtica ferox</i>	ongaonga	Urticaceae
* <i>Vicia faba</i>	broad bean	Fabaceae
<i>Vitex lucens</i>	puriri	Verbenaceae
<i>Weinmannia</i>	—	Cunoniaceae
<i>Weinmannia racemosa</i>	kamahi	Cunoniaceae
<i>Xeronema</i>	Poor Knight's lily	Agavaceae
* <i>Zea mays</i>	maize	Poaceae

Appendix C. Acronyms of entomological collections and museums.

AM	Australian Museum, Sydney, NSW, Australia.	MNHP	Muséum National d'Histoire Naturelle, Paris, France.
AMNZ	Auckland War Memorial Museum, Auckland.	MONZ	Museum of New Zealand Te Papa Tongarewa, Wellington, New Zealand.
BMNH	The Natural History Museum, London, England (formerly British Museum of Natural History).	NHRM	Naturhistoriska Riksmuseet, Stockholm, Sweden.
BPBM	Bernice P. Bishop Museum, Honolulu, Hawaii, USA.	NZAC	New Zealand Arthropod Collection, Landcare Research, Auckland, New Zealand.
CMNZ	Canterbury Museum, Christchurch, New Zealand.	OMNZ	Otago Museum, Dunedin, New Zealand [now including BPNZ].
LUNZ	Entomology Research Museum, Lincoln University, Lincoln, New Zealand.	—	Perth Museum and Art Gallery, Perth, Scotland.
MHNG	Muséum d'Histoire Naturelle, Geneva, Switzerland.	QM	Queensland Museum, Brisbane, QLD, Australia.
		SAMA	South Australian Museum, Adelaide, SA, Australia.
		UMB	Übersee Museum, Bremen, Germany.

Appendix D. Alphabetical list of taxa incorrectly recorded or doubtfully established in New Zealand.

The current lists does not include taxa that have already been excluded from previous faunal checklists (e.g., Kirkaldy, 1909a; Wise, 1977).

Cicadellidae, Deltocephalinae, Athysanini

Alodeltocephalus obliquus (Evans, 1938)

Day & Fletcher (1994: 1205) catalogued this species in detail for Australia. The only suggestion of the occurrence of this species in New Zealand is from Evans (1966), who stated that it was widely distributed in Australia and New Zealand. Day & Fletcher (1994) discussed the location of the specimen which should be considered the holotype of this species. Although synonymised with *A. longinquus* by Evans (1966), *A. obliquus* was found to be distinct by Knight (1975). The male genitalia illustrated by Evans (1966) for *A. longinquus* are in fact those of *A. obliquus* (Knight, 1975). Knight (1975) appears to have seen only one male from Tasmania and no material from New Zealand. To date no collection record from NZAC can support the presence of this Australian species in New Zealand.

Limotettix incertus Evans, 1966

Day & Fletcher (1994: 1208) catalogued this species in detail for Australia. Knight (1975) had raised doubts about Evans' (1966) record of this species in New Zealand, writing that "It [*Limotettix*] was first recorded from New Zealand by Evans (1966), who listed Auckland and Greymouth as localities for *incerta*. *Cicadula awae*, which belongs to *Limotettix*, had been described earlier by Myers (1924) from Auckland and Chatham Island, however. Four species are described from New Zealand; all are endemic and distinct from *incerta*, whose presence in New Zealand has not been confirmed." To date no collection record from NZAC can support the presence of this Australian species in New Zealand.

Cicadellidae, Deltocephalinae, Macrostelini

Balclutha rieki Knight, 1987

Knight's (1987) New Zealand record of this species was based on a single collecting event made in 1985 from the Auckland region: 3 males and 3 females, "Waitakere Ridge near Kauri Knoll, 20-25.iii.1985, malaise trap, mixed podocarp forest, A.D. Austin [BMNH]." There is no evi-

dence from NZAC, or from any other New Zealand collections, of this species having been collected prior to, or after that date, which suggests that the species is not established in New Zealand. The authors suspect the 1985 record was based either on stragglers, never resulting in established natural populations, or on mislabelled specimens.

Cicadellidae, Deltocephalinae, Scaphytopiini

Japananus hyalinus (Osborn, 1900)

A single specimen is known from Auckland (Lynfield, 28 Jan 1989, B.A. Holloway, on window), but whether the species is established in New Zealand is yet to be confirmed.

Cicadellidae, Typhlocybinae, Typhlocybini

Edwardsiana crataegi (Douglas, 1876)

There is no evidence of the occurrence of this species in New Zealand. The record of this species from New Zealand is derived from the synonymy between *E. crataegi* and *E. froggatti*, first proposed by Nast (1972). This synonymy appears to have been based on a publication by Günthart (1971) who showed that the two forms were capable of interbreeding in the laboratory. However, while males of *E. froggatti* were able to couple with females of *E. crataegi*, the longer apical aedeagal appendages of *E. crataegi* meant that the reverse combination was impossible. It is probable that the interbreeding that was observed was a laboratory artefact and that such behaviour may not occur naturally. The synonymy was neither accepted by Knight (1976a) nor by Wise (1977), who both listed only *E. froggatti* from New Zealand (under the generic name *Typhlocyba*). Charles (1989) followed Nast (1972) and recorded the name *E. crataegi* from New Zealand. However, in doing so he also indicated that NZAC contains two forms of males and implied that these corresponded with *E. froggatti* and *E. crataegi*. Knight (1976a) published illustrations of the genitalia which show that the form he examined in New Zealand is the form with the shorter apical aedeagal processes (i.e. *E. froggatti*). It was assumed that the second form mentioned by Charles (1989) was therefore either *E. crataegi* or *E. lethierryi*. Our examination of material from NZAC confirms that all specimens identified as *E. froggatti* by Knight (1976a) are in fact *E. froggatti*, and that *E. lethierryi* is the second species occurring in New Zealand.

Cicadellidae, Ulopinae, Cephalellini

Paracephaleus montanus (Evans, 1942)

Day & Fletcher (1994) recorded *P. montanus* (Evans, 1942b) from Tasmania and New Zealand but this species does not occur in New Zealand.

Derbidae, Otiocerinae, Otiocerini

Deribia coccinea (Guérin-Ménéville)

Kirby (1885, *Elementary Textbook of Entomology* : 212) noted that this species was present in New Zealand but no evidence has been found to substantiate this record.

Flatidae, Flatinae, Nephesini

Colgaroides acuminata (Walker), the mango planthopper

This distinctive, relatively large species of Flatidae was recorded from New Zealand by Melichar (1902) but New Zealand was not included in the range of the species by Melichar (1923, *Genera Insectorum* 182: 61). No specimens are known to exist in collections and the record is here regarded as highly doubtful.

Ricaniidae

Ricanoptera mellerborgi (Stål)

This species was recorded in New Zealand by Riley and Howard (1891: *Insect Life* 3: 424) as *Ricania discalis*, reported as being “exceedingly plentiful around Auckland during the last 8 or 10 years”, particularly on cultivated passionfruit. This is almost certainly a misidentification of *Scolypopa australis* which remains as the only ricaniid recorded in New Zealand. The note does provide a measure of the likely timing of the species’ introduction to New Zealand from Australia.

Appendix E. Geographical coordinates of main localities. Coordinates should read 00°00'S/000°00'E. The two-letter area codes follow Crosby *et al.* (1976, 1998). A “—” indicates a locality with unknown coordinates.

Acland Lagoon, Tasman Valley,

Mount Cook, MK	4350/17006
Alex Knob, WD	4326/17009
Alexandra, CO	4515/16924
Altimarlock Peak, MB	4144/17351
Altimarlock Peak Hut, MB	4147/17350
Aniseed Valley, NN	4123/17309
Aorangi Mountains, WA	4127/17520
Aorangi, Poor Knights Islands, ND ...	3528/17444
Armstrong Saddle, Ruahine	
Range, RI	3946/17610
Arthurs Pass, NC	4254/17133
Ashburton, MC	4354/17145
Auckland, AK	3651/17446
Awarakau, Chatham Island, CH	4400/17638
Awatere Valley, MB	4137/17410
Awatotara Forest, Chatham	
Island, CH	4402/17636

Ball Hut, Tasman Valley, Mount

Cook, MK	4337/17011
Balloon Hut, Mount Arthur, NN	4110/17237
Banks Peninsula, MC	4344/17253
Bastion Point, Auckland, AK	3650/17449
Bauza Island, FD	4517/16654
Bay of Islands, ND	3510/17411
Beaumont, CO/SL	4549/16931
Beebys Knob, NN	4144/17256
Belltopper Falls, Port Pegasus, SI ...	4709/16741
Ben Mohr, OL	4457/16832
Ben Nevis, NN	4133/17304
Big South Cape Island, SI	4715/16724
Birch Island, SL/DN	4554/16929
Black Birch Range, MB	4144/17350
Blackmount Homestead,	
Takitimu Range, SL	4545/16740
Blue Lake (Lake Tikitapu), BP	3811/17619
Blue Mountains, SL	4556/16920
Bluff Hill, Napier, HB	3928/17654
Borland Range, FD	4542/16728
Breaker Bay, Wellington, WN	4119/17449
Bream Bay, ND	3557/17427
Browns Bay, Auckland, AK	3643/17445
Bruce Park, Hunterville, WI	3957/17530
Buckland Peaks, Paparoa Range, BR4	153/17138
Bull Mound, WN	4059/17518
Bullock Creek, BR	4208/17129

Cannister Cove Scientific

Reserve, Pitt Island, CH	4420/17613
Cape Foulwind, BR	4149/17128
Cape Kidnappers, HB	3938/17705
Cape Terawhiti, WN	4117/17437
Cass, MC	4302/17145
Castaway Camp, Great Island, TH ...	3410/17208
Castlecliff, WI	3957/17459
“Central Otago”, CO	4514/16922
Charwell Forks School, KA	4225/17321
Chateau, Mount Ruapehu, TO	3911/17532
Chatham Island, CH	4352/17630
Chatham Islands, CH	4400/17630
Cheviot Face/Hills Face,	
Takitimu Range, SL	4537/16746
Christchurch, MC	4332/17238
Cleughearn Peak, FD	4549/16724
Clinton River, FD	4453/16754
Cobden Beach, BR	4225/17112
Coppermine Saddle, BR	4120/17321
Cornwallis, Auckland, AK	3700/17436
Coroglen, CL	3655/17541
Coromandel, CL	3645/17530
Coronet Peak, OL	4454/16844
Council Cave, NN	4052/17250
Craigieburn, MC	4306/17151
Crimea Range, MB	4209/17247
Croesus Knob (near), Paparoa	
Range, BR	4217/17122
Cuvier Island, CL	3626/17546
Dart Hut/Valley, OL	4431/16833
Days Bay, WN	4116/17454
Dee Stream, KA	4200/17344
Denniston, NN	4144/17148
Dolamore Park, SL	4603/16849
Double Cone, The Remarkables, CO	4504/16848
Dublin Terrace, Buller Gorge, BR	4148/17204
Dundas Hut/Ridge, Tararua	
Range, WN	4042/17527
Dunedin, DN	4553/17030
Dun Mountain, NN	4120/17322
D’Urville Island, SD	4050/17350
Dyers Pass, Banks Peninsula, MC ...	4337/17238
Eglinton Valley, FD	4508/16758
Erua, TO	3914/17524
Eves Valley, NN	4120/17303
Eyre Mountains, OL	4517/16835
Fell Peak, MB	4127/17324
Fisherman Island, NN	4059/17303
Fletcher Creek, BR	4159/17150
Flora Track, Mount Arthur, NN	4110/17243

Foxton, WI	4028/17517	Kohukohu, ND	3521/17332
Freshwater Creek, SI	4652/16755	Kokiri, BR	4229/17123
Fruitlands, CO	4520/16918		
Garvie Mountains, CO	4527/16854	Lake Alta, The Remarkables, CO	4503/16848
Gertrude Saddle, FD	4444/16800	Lake Harris, FD	4443/16810
Gisborne, GB	3840/17801	Lake Ianthe State Forest, WD	4304/17037
Glentanner Station, Tasman		Lake Kaniere, WD	4249/17108
Valley, MK	4509/17008	Lake Mahinerangi, DN	4550/16953
Glory Bay, Pitt Island, CH	4419/17618	Lake Manapouri, West Arm, FD	4530/16719
Glory Scenic Reserve, Pitt Island, CH	4419/17612	Lake Marian, FD	4447/16804
Gollans Valley, WN	4121/17452	Lake McKay, Pisa Range, CO	4450/16912
Governors Bay, Banks Peninsula, MC4337/17238		Lake Orbell, FD	4517/16740
Governors Bush, Mount Cook, MK	4344/17005	Lake Pukaki, MK	4354/17008
Great Barrier Island, CL	3614/17526	Lake Rotoiti, BR	4148/17250
Great Island, TH	3410/17208	Lake Rotoroa, BR	4149/17237
Greenlane, Auckland, AK	3653/17447	Lake Wahapo, WD	4315/17015
Greymouth, BR	4226/17111	Lake Wairarapa, WA	4113/17517
		Lake Wakatipu, OL	4505/16836
Hanmer, MB	4232/17251	Levin, WN	4037/17517
Hannahs Bay, Rotorua, BP	3807/17618	Lewis Pass, BR	4222/17224
Hastings, HB	3938/17650	Lincoln, Christchurch, MC	4338/17229
Haurangi, WA	4121/17523	Logan E Basin, Tararua Range, WN	4043/17528
Hawkswood Stream, NC	4266/17332	Longacre, Wanganui, WI	3942/17656
Henderson, Auckland, AK	3652/17437	Longwood Range, SL	4615/16750
Hermitage, Mount Cook, MK	4343/17005	Lyall Bay, Wellington, WN	4119/17447
Hokitika, WD	4242/17057	Lynfield, Auckland, AK	3655/17443
Hokonui Hills, SL	4559/16834		
Hollyford Valley, FD	4432/16806	Macauley Island, KE	3014/17824
Hooker Valley, Mount Cook, MK	4343/17005	Mackenzie Pass, MK	4534/16708
Houhora, ND	3447/17306	Makara, WN	4116/17442
Huia, Auckland, AK	3659/17433	Makarora, Mount Aspiring, OL	4413/16913
Huia Dam, Waitakere Ranges, AK	3657/17432	Mamaku, BP	3806/17605
Hump Ridge, FD	4607/16719	Mangahuia Stream, RI	3954/17555
Hunter Mountains, FD	4539/16723	Mangamuka Range, ND	3511/17328
Hunterville, WI	3957/17534	Mangatawai Stream, TO	3909/17542
Hyde Rocks, CO	4523/16911	Mangere Island, CH	4416/17618
		Mangonui, ND	3459/17331
Island Creek, BR	4150/17137	Matamata, WO	3748/17546
Island Saddle, MB	4210/17247	Mataura River/Valley, OL	4539/16837
		McLennans Bush, MC	4334/17132
Judd Ridge, WN	4054/17514	Meggat Burn, Berwick State	
		Forest, DN	4557/17005
Kaeo, ND	3506/17346	Meyer Island, KE	2915/17752
Kaikoura, KA	4224/17341	Mokoreta No. 2, SL	4619/16907
Kaingaroa, Pitt Island, CH	4415/17615	Molesworth, MB	4205/17315
Kaitaia, ND	3506/17315	Monowai, FD	4547/16737
Karori, Wellington, WN	4117/17445	Mount Albert, Auckland, AK	3653/17443
Kea Point, Mount Cook, MK	4342/17004	Mount Alpha, WN	4059/17516
Kekerengu, KA	4200/17400	Mount Arthur, NN	4111/17242
Kelceys Bush, SC	4441/17057	Mount Augustus, NN	4141/17151
Kermadec Islands, KE	2916/17755	Mount Barber, FD	4530/16712
Kerr Point, ND	3424/17259	Mount Bitterness, CO	4445/17018
Kirikiri Saddle, CL	3708/17538	Mount Burns, FD	4544/16724
Knuckle Hill, Westhaven Inlet, NN	4038/17233	Mount Cook, MK	4336/17009
		Mount Cook National Park, MK	4337/17010

Mount Domett, NN	4103/17218	Otaki River, Levin, WN	4048/17511
Mount Earnslaw, OL	4439/16823	Otira, WD	4249/17133
Mount Eden, Auckland, AK	3652/17445	Owaka, SL	4627/16939
Mount Grey, FD	4533/16714	Paekakariki, WN	4059/17457
Mount Grey, NC	4307/17232	Paiaka, WI	4032/17520
Mount Hedgehope, SL	4611/16833	Paihia, ND	3516/17405
Mount Hercules, WD	4310/17027	Palmerston, DN	4529/17043
Mount Holdsworth, WN	4052/17524	Palmerston North, WI	4021/17536
Mount Ida, CO	4455/17005	Paraparaumu Beach, WN	4053/17458
Mount Misery, BR	4155/17240	Parnell, Auckland, AK	3651/17446
Mount Owen, NN	4133/17232	Paynes Ford Scenic Reserve, Takaka, NN	4053/17249
Mount Peel, NN	4108/17235	Pearl Island, Port Pegasus, SI	4711/16742
Mount Pureora, TO	4148/17225	Percy Saddle, FD	4533/16718
Mount Rakeahua, SI	4656/16752	Pipiriki, Wanganui River, WI	3928/17502
Mount Robert, BR	4149/17248	Pisa Range, CO	4453/16910
Mount Ruapehu, TO	3916/17534	Pitt Island, CH	4415/17613
Mount Sebastopol, MK	4345/17005	Poor Knights Islands, ND	3527/17444
Mount Sewell, BR	4224/17120	Pori, WA	4036/17556
Mount Snowflake, KA	4216/17331	Port Hills, Christchurch, MC	4335/17240
Mount Stokes, SD	4103/17406	Port Pegasus, SI	4712/17641
Mount Tapuae-o-Uenuku, KA	4159/17339	Porters Pass, MC	4317/17144
Mount Te Aroha, BP	3732/17544	Prices Valley, Banks Peninsula, MC ..	4346/17242
Napier, HB	3930/17654	Puketū State Forest, ND	3513/17343
National Park, TO	3910/17523	Puketū, Waewaepa Range, WA	4030/17607
Nelson, NN	4117/17317	Punakaiki, BR	4206/17120
Nervous Knob, MC	4307/17140	Pureora State Forest Park, TO	3845/17529
New Brighton, Christchurch, MC	4330/17243	Queenstown, OL	4501/16839
Ngauranga Gorge, Wellington, WN ...	4114/17448	Rainbow Ski Field, MB	4152/17250
Nihotupu, Waitakere Ranges, AK	3658/17435	Rakeahua Valley, SI	4659/16750
North Cape, ND	3424/17302	Rangiauria, Pitt Island, CH	4419/17616
North End Lagoon, Chatham Island, CH	4346/17634	Raoul Island, KE	2916/17755
North Meyer Island, KE	2915/17752	Rastus Burn, CO	4500/16848
North Peak, Big South Cape Island, SI	4713/16725	Raurimu, TO	3907/17523
Oban, SI	4654/16807	Red Rocks, Wellington, WN	4121/17443
Obelisk, Old Man Range, CO	4519/16912	Red Tarns, Mount Cook, MK	4344/17005
Ocean Beach, ND	3549/17434	Riccarton, Christchurch, MC	4332/17236
Ohakune, TO	3925/17525	Richmond Range, MB	4132/17310
Ohope Beach, BP	3757/17702	Riwaka, NN	4104/17259
Ohuri, ND3525/17331		Rock and Pillar Range, CO	4532/17001
Okari River, BR	4149/17129	Rocklands Station, CO	4540/16959
Okiwi, Great Barrier Island, CL	3609/17523	Ross Creek Reservoir, DN	4550/17030
Old Man Range, CO	4523/16913	Rotorua, BP	3809/17615
Omahuta State Forest, ND	3515/17337	Ruahine Range, RI	3959/17605
Opepe Historical Reserve, TO	3846/17613	Sealy Range, MK	4344/17003
Oratia, Auckland, AK	3654/17436	Seaward Kaikoura Range, KA	4215/17333
Orepuki, SL	4616/16744	Selwyn Bridge, MC	4338/17213
Orongorongo Field Station/River, WN	4124/17454	Selwyn River mouth, MC	4343/17226
“Otago”, CO	4514/16922	Sentinel Peak, OL	4424/16914
Otahuna, MC	4340/17735	Sharplin Falls, Bowyers Stream, MC	4337/17124
Otaki Beach, WN	4044/17506	Shingle Creek, CO	4525/16916
Otaki Forks, WN	4052/17513		

Ship Cove, SD	4105/17414	Tongariro National Park, TO	3913/17536
Shut Eye Camp, Ruahine Range, RI	3947/17610	Tower Peak, Takitimu Range, SL	4538/16747
Sign of the Kiwi, Banks Peninsula, MC	4336/17238	Travers Range, BR	4158/17243
Silverstream, WN	4109/17501	Triplex Creek, Ruahine Range, RI	3947/17611
Simonin Creek, Upper Pyke River, FD	4420/16820	Tumbledown Bay, Banks Peninsula, MC	4351/17246
Slopedown Range, SL	4622/16904	Turk Ridge, Crimea Range, MB	4207/17249
Smiths Ford, Maitai Valley, NN	4118/17321	Turret Range, FD	4531/16720
Somes Island, WN	4115/17451	Unuwahao, ND	3425/17253
South East Bay, Great Island, TH	3410/17208	Upper Hutt, WN	4107/17504
South East Island (Rangatira), CH ..	4421/17610	Ureti Beach, ND	3948/17604
South Meyer Island, KE	2915/17752	Urquharts Bay, ND	3550/17432
South Peak, Big South Cape Island, SI	4714/16724	Waewaepa Range, WA	4026/17603
South West Island, TH	3410/17216	Waikanae, WN	4052/17503
Spenser Mountains/Range, BR	4212/17235	Waikato-Waipakihi Rivers junction, TO	3914/17547
Spirits Bay, ND	3427/17247	Waikawau village, CL	3635/17531
Springs Junction, BR	4219/17211	Waikouaiti, DN	4535/17039
Springston, MC	4338/17225	Waimangaroa, NN	4142/17145
Staveley, MC	4339/17126	Waimarino River, TO	3857/17551
Stephens Island, SD	4040/17400	Waimate, SC	4443/17102
Stewart Island, SI	4700/16800	Wainuiomata, WN	4115/17457
Table Hill, SI	4702/16750	Waioku Coach Road Track, Mataraua Forest, ND	3534/17435
Tahunanui, NN	4117/17314	Waipapa Reserve, TO	3817/17540
Taihape, RI	3940/17547	Waipaua to Glory Bay, Pitt Island, CH	4418/17618
Takaka, NN	4050/17248	Waipoua State Forest, ND	3539/17333
Takaka Hill, NN	4102/17551	Wairau-Rainbow Rivers Divide, MB ..	4201/17253
Takitimu Range, SL	4542/16750	Wairau Valley, MB	4139/17312
Tangimoana, WI	4017/17514	Wairoa, GB	3902/17725
Tararua Range, WN	4028/17539	Waitakere Ranges, AK	3656/17432
Tasman Bay, NN	4113/17305	Waitangi, Chatham Island, CH	4357/17627
Tasman River/Valley, MK	4350/17008	Waitangi Estate, ND	3515/17404
Tasman Valley, Great Island, TH	3410/17208	Wallaby Creek, Mawhera State Forest, NN	4227/17131
Tasman Valley, Mount Cook, MK	4343/17008	Warawara State Forest, ND	3522/17318
Taumarunui, TO	3852/17515	Warkworth, AK	3623/17439
Taupo, TO	3841/17604	Wellington, WN	4115/17445
Tauweru, WA	4057/17547	“West Coast”, WD	4246/17057
Tawhiti Rahi, Poor Knights Islands, ND	3527/17444	West Island, TH	3411/17202
Te Atatu, Auckland, AK	3650/17439	Western Springs, Auckland, AK	3651/17443
Te Kao, ND	3439/17258	Westport, BR	4144/17135
Te Maraeora Flat, Little Barrier Island, CL	3613/17503	Whakarewarewa, BP	3809/17615
Te Paki, ND	3430/17247	Whangamoa Saddle, NN	4113/17326
Temple Basin, NC	4254/17134	Whangaparaoa Peninsula, AK	3637/17445
Tengawai River, near Pleasant Point, SC	4415/17108	Whangarei, ND	3543/17419
Terawhiti, WN	4116/17437	Whangarei Heads, ND	3548/17430
The Remarkables, CO	4504/16847	Whare Creek, Takitimu Range, SL	4538/16741
Thompson Sound, FD	4514/16659	Wilmot Pass, FD	4530/16711
Three Kings Islands, TH	3411/17204	Wolfe Flat, FD	4531/16717
Titahi Bay, WN	4106/17450	York Bay, Wellington, WN	4115/17454
Titirangi, Auckland, AK	3656/17439		

Appendix F. Alphabetical list of valid taxa by areas of New Zealand. A = adventive; E = endemic; N = native but not endemic to New Zealand; R = endemic restricted to a single area of the country.

North Island

AK

64 taxa

E, 45; N, 8; A, 11; R, 1.

Achilidae

Achilus flammeus ^A

Agandecca annectens ^E

Aphrophoridae

Carystoterpa fingens ^E

Carystoterpa maori ^E

Carystoterpa subvirescens ^E

Carystoterpa vagans ^E

Cicadellidae

Anzygina agni ^{E, R}

Anzygina dumbletoni ^{A?}

Anzygina zealandica ^N

Arawa novella ^N

Arawa variegata ^E

Balclutha incisa ^A

Batracomorphus adventitiosus ^N

Batracomorphus angustatus ^{N?}

Edwardsiana froggatti ^A

Euacanthella palustris ^A

Eupteryx melissae ^A

Limotettix awae ^E

Maiestas knighti ^N

Maiestas vetus ^N

Nesoclutha phryne ^N

Novothybris notata ^E

Novothybris zealandica ^E

Paracephaleus hudsoni ^E

Ribautiana tenerrima ^A

Scaphetus brunneus ^E

Xestocephalus ovalis ^E

Cicadidae

Amphipsalta cingulata ^E

Amphipsalta zelandica ^E

Kikihia cauta ^E

Kikihia cutora cumberi ^E

Kikihia cutora cutora ^E

Kikihia dugdalei ^E

Kikihia laneorum ^E

Kikihia ochrina ^E

Kikihia scutellaris ^E

Notopsalta sericea ^E

Rhodopsalta cruentata ^E

Rhodopsalta leptomera ^E

Cixiidae

Aka finitima ^E

Cermada inexpectata ^E

Cermada punctimargo ^E

Huttia nigrifrons ^E

Koroana rufifrons ^E

Tiriteana clarkei ^E

Zeoliarus atkinsoni ^E

Zeoliarus oppositus ^E

Delphacidae

Anchodelphax olenus ^E

Nilaparvata myersi ^E

Notohyus erosus ^E

Opiconsiva dilpa ^{N?}

Sulix miridianalis ^E

Sulix tasmani ^E

Ugyops (Paracona) pelorus ^E

Ugyops (Ugyops) caelatus ^E

Ugyops (Ugyops) rhadamanthus ^E

Derbidae

Eocenchrea maorica ^E

Dictyopharidae

Thanatodictya (Niculda) tillyardi ^E

Flatidae

Anzora unicolor ^A

Siphanta acuta ^A

Membracidae

Acanthuchus trispinifer ^A

Myerslopiidae

Pemmation bifurca ^E

Pemmation parvum ^E

Ricaniidae

Scolypopa australis ^A

BP

46 taxa

E, 40; N, 3; A, 3; R, 1.

Achilidae

Agandecca annectens ^E

Aphrophoridae

Carystoterpa fingens ^E

Carystoterpa minor ^E

Carystoterpa vagans ^E

Pseudaphronella jactator ^E

Cicadellidae

Anzygina toetoe ^E

Anzygina zealandica ^N

Nesoclutha phryne ^N

Arawa variegata ^E

Novothybris notata ^E

Scaphetus brunneus ^E

Xestocephalus ovalis ^E

Cicadidae

Amphipsalta cingulata ^E

Amphipsalta zelandica ^E

Kikihia cauta ^E

Kikihia cutora cumberi ^E

Kikihia dugdalei ^E

Kikihia ochrina ^E

Kikihia scutellaris ^E

Maoricicada iolanthe ^E

Notopsalta sericea ^E

Rhodopsalta cruentata ^E

Rhodopsalta microdora ^E

Cixiidae

Aka finitima ^E

Cermada punctimargo ^E

Huttia nigrifrons ^E

Koroana rufifrons ^E

Parasemo hutchersoni ^E

Tiriteana clarkei ^E

Zeoliarus atkinsoni ^E

Zeoliarus oppositus ^E

Delphacidae

Nilaparvata myersi ^E

Notogryps ithoma ^E

Opiconsiva dilpa ^{N?}

Sulix miridianalis ^E

Sulix tasmani ^E

Ugyops (Paracona) pelorus ^E

Ugyops (Ugyops) caelatus ^E

Ugyops (Ugyops) rhadamanthus ^E

Derbidae

Eocenchrea maorica ^E

Dictyopharidae

Thanatodictya (Niculda) tillyardi ^E

Flatidae

Anzora unicolor ^A

Siphanta acuta ^A

Myerslopiidae

Myerslophia tearohai ^{E, R}

Pemmation parvum ^E

Ricaniidae

Scolypopa australis ^A

CL

49 taxa

E, 39; N, 4; A, 6; R, 0.

Aphrophoridae

Carystoterpa fingens ^E

Carystoterpa minor ^E

Carystoterpa vagans ^E

Pseudaphronella jactator ^E

Cicadellidae

Anzygina dumbletoni ^{A?}

Anzygina zealandica ^N

Arahura dentata ^E

Arawa novella ^N

Euacanthella palustris ^A

Maiestas vetus ^N

Nesoclutha phryne ^N

Novothybris notata ^E

Novothybris zealandica ^E

Paracephaleus hudsoni ^E

Ribautiana tenerrima ^A

Scaphetus brunneus ^E

Xestocephalus ovalis ^E

Cicadidae

Amphipsalta cingulata ^E

Amphipsalta zelandica ^E

Kikihia cauta ^E

Kikihia cutora cumberi ^E
Kikihia cutora cutora ^E
Kikihia laneorum ^E
Kikihia scutellaris ^E
Maoricicada iolanthe ^E
Notopsalta sericea ^E
Rhodopsalta cruentata ^E

Cixiidae

Aka finitima ^E
Cermada inexpectata ^E
Cermada punctimargo ^E
Huttia nigrifrons ^E
Koroana rufifrons ^E
Tiriteana clarkei ^E
Zeoliarus atkinsoni ^E
Zeoliarus oppositus ^E

Delphacidae

Nilaparvata myersi ^E
Notogryps ithoma ^E
Notohyus erosus ^E
Sulix tasmani ^E
Ugyops (Paracona) pelorus ^E
Ugyops (Ugyops) caelatus ^E
Ugyops (Ugyops) rhadamanthus ^E

Derbidae

Eocenchrea maorica ^E

Dictyopharidae

Thanatodictya (Niculda) tillyardi ^E

Flatidae

Anzora unicolor ^A
Siphanta acuta ^A

Myerslopiidae

Pemmation bifurca ^E
Pemmation parvum ^E

Ricaniidae

Scolypopa australis ^A

GB

28 taxa

E, 20; N, 2; A, 6; R, 0.

Achilidae

Agandecca annectens ^E

Aphrophoridae

Carystoterpa vagans ^E
Pseudaphronella jactator ^E

Cicadellidae

Anzygina dumbletoni ^{A?}
Anzygina zealandica ^N
Arawa novella ^N
Arawa variegata ^E
Limotettix awae ^E
Rhytidodus decimaquartus ^A
Xestocephalus ovalis ^E

Cicadidae

Amphipsalta zelandica ^E
Kikihia cutora cumberi ^E
Kikihia dugdalei ^E
Kikihia laneorum ^E
Kikihia subalpina ^E

Maoricicada iolanthe ^E

Rhodopsalta microdora ^E

Cixiidae

Cermada punctimargo ^E
Koroana rufifrons ^E
Semo clypeatus ^E
Tiriteana clarkei ^E
Zeoliarus oppositus ^E

Delphacidae

Toya dryope ^A
Ugyops (Paracona) pelorus ^E

Flatidae

Anzora unicolor ^A
Siphanta acuta ^A

Myerslopiidae

Pemmation parvum ^E

Ricaniidae

Scolypopa australis ^A

HB

36 taxa

E, 22; N, 3; A, 11; R, 0.

Achilidae

Agandecca annectens ^E

Aphrophoridae

Carystoterpa vagans ^E
Philaenus spumarius ^A
Pseudaphronella jactator ^E

Cicadellidae

Anzygina dumbletoni ^{A?}
Anzygina zealandica ^N
Arawa novella ^N
Edwardsiana froggatti ^A
Edwardsiana lethierryi ^A
Euacanthella palustris ^A
Eupteryx melissae ^A
Maiestas vetus ^N
Rhytidodus decimaquartus ^A
Scaphetus brunneus ^E
Xestocephalus ovalis ^E
Zelopsis nothofagi ^E

Cicadidae

Amphipsalta cingulata ^E
Amphipsalta strepitans ^E
Amphipsalta zelandica ^E
Kikihia cutora cumberi ^E
Kikihia scutellaris ^E
Kikihia subalpina ^E
Maoricicada campbelli ^E
Notopsalta sericea ^E
Rhodopsalta microdora ^E

Cixiidae

Aka duniana ^E
Koroana rufifrons ^E
Zeoliarus oppositus ^E

Delphacidae

Toya dryope ^A

Derbidae

Eocenchrea maorica ^E

Dictyopharidae

Thanatodictya (Niculda) tillyardi ^E

Flatidae

Anzora unicolor ^A
Siphanta acuta ^A

Myerslopiidae

Myerslophia magna magna ^E
Pemmation parvum ^E

Ricaniidae

Scolypopa australis ^A

ND

60 taxa

E, 47; N, 7; A, 6; R, 4.

Achilidae

Agandecca annectens ^E

Aphrophoridae

Bathyllus albicinctus ^A
Carystoterpa chelyon ^{E, R}
Carystoterpa fingens ^E
Carystoterpa ikana ^E
Carystoterpa minima ^{E, R}
Carystoterpa minor ^E
Carystoterpa subvirescens ^E
Carystoterpa vagans ^E

Cicadellidae

Anzygina zealandica ^N
Arawa variegata ^E
Batracomorphus adventitiosus ^N
Euacanthella palustris ^A
Limotettix awae ^E
Limotettix pullatus ^N
Maiestas knighti ^N
Maiestas vetus ^N
Nesoclutha phryne ^N
Novothybris extremitatis ^{E, R}
Novothybris notata ^E
Novothybris zealandica ^E
Paracephaleus hudsoni ^E
Scaphetus brunneus ^E
Xestocephalus ovalis ^E
Zelopsis nothofagi ^E

Cicadidae

Amphipsalta cingulata ^E
Amphipsalta zelandica ^E
Kikihia cauta ^E
Kikihia cutora cutora ^E
Kikihia dugdalei ^E
Kikihia ochrina ^E
Notopsalta sericea ^E
Rhodopsalta cruentata ^E
Rhodopsalta leptomera ^E

Cixiidae

Aka finitima ^E
Cermada inexpectata ^E
Cermada punctimargo ^E
Huttia nigrifrons ^E
Huttia northlandica ^{E, R}
Koroana rufifrons ^E

Tiriteana clarkei ^E
Zeoliarus atkinsoni ^E
Zeoliarus oppositus ^E
Delphacidae
Anchodelphax hagnon ^E
Anchodelphax olenus ^E
Eorissa cicatrifrons ^E
Nilaparvata myersi ^E
Notogryps ithoma ^E
Opiconsiva dilpa ^{N?}
Sulix miridianalis ^E
Sulix tasmani ^E
Toya dryope ^A
Ugyops (Paracona) pelorus ^E
Ugyops (Ugyops) caelatus ^E
Ugyops (Ugyops) rhadamanthus ^E
Derbidae
Eocenchrea maorica ^E
Dictyopharidae
Thanatodictya (Niculda) tillyardi ^E
Flatidae
Anzora unicolor ^A
Siphanta acuta ^A
Ricaniidae
Scolytopa australis ^A

RI

26 taxa

E, 23; N, 2; A, 1; R, 0.

Aphrophoridae
Carystoterpa vagans ^E
Pseudaphronella jactator ^E
Cicadellidae
Anzygina ramsayi ^E
Anzygina toetoe ^E
Anzygina zealandica ^N
Scaphetus brunneus ^E
Xestocephalus ovalis ^E
Zelopsis nothofagi ^E
Cicadidae
Kikihia cauta ^E
Kikihia laneorum ^E
Kikihia muta muta ^E
Kikihia subalpina ^E
Maoricicada cassiope ^E
Maoricicada hamiltoni ^E
Notopsalta sericea ^E
Rhodopsalta cruentata ^E
Cixiidae
Aka finitima ^E
Aka rhodeae ^E
Koroana ruffifrons ^E
Semo transinsularis ^E
Zeoliarus oppositus ^E
Delphacidae
Nilaparvata myersi ^E
Opiconsiva dilpa ^{N?}

Myerslopiidae
Pemmation parvum ^E
Pemmation verrucosum ^E
Ricaniidae
Scolytopa australis ^A

TK

29 taxa

E, 25; N, 1; A, 3; R, 0.

Achilidae
Agandecca annectens ^E
Aphrophoridae
Carystoterpa fingens ^E
Carystoterpa vagans ^E
Philaenus spumarius ^A
Pseudaphronella jactator ^E
Cicadellidae
Nesoclutha phryne ^N
Novothybris zealandica ^E
Scaphetus brunneus ^E
Zelopsis nothofagi ^E
Cicadidae
Amphipsalta cingulata ^E
Amphipsalta zelandica ^E
Kikihia cutora cumberi ^E
Kikihia laneorum ^E
Kikihia muta muta ^E
Kikihia ochrina ^E
Kikihia scutellaris ^E
Kikihia subalpina ^E
Maoricicada iolanthe ^E
Notopsalta sericea ^E
Rhodopsalta cruentata ^E
Cixiidae
Koroana ruffifrons ^E
Semo clypeatus ^E
Tiriteana clarkei ^E
Zeoliarus atkinsoni ^E
Zeoliarus oppositus ^E
Delphacidae
Sulix miridianalis ^E
Flatidae
Siphanta acuta ^A
Myerslopiidae
Myerslopiia magna magna ^E
Ricaniidae
Scolytopa australis ^A

TO

54 taxa

E, 46; N, 6; A, 2; R, 1.

Achilidae
Agandecca annectens ^E
Aphrophoridae
Carystoterpa vagans ^E
Philaenus spumarius ^A

Pseudaphronella jactator ^E
Cicadellidae
Anzygina zealandica ^N
Arawa negata ^E
Arawa novella ^N
Arawa pulchra ^N
Arawa variegata ^E
Batracomorphus adventitiosus ^N
Limotettix harrisi ^{E, R}
Maiestas knighti ^N
Maiestas vetus ^N
Novothybris cithara ^E
Novothybris zealandica ^E
Paracephaleus curtus ^E
Paracephaleus hudsoni ^E
Scaphetus brunneus ^E
Xestocephalus ovalis ^E
Zelopsis nothofagi ^E
Cicadidae
Amphipsalta cingulata ^E
Amphipsalta zelandica ^E
Kikihia cauta ^E
Kikihia cutora cumberi ^E
Kikihia dugdalei ^E
Kikihia laneorum ^E
Kikihia ochrina ^E
Kikihia scutellaris ^E
Kikihia subalpina ^E
Maoricicada campbelli ^E
Maoricicada cassiope ^E
Maoricicada iolanthe ^E
Rhodopsalta cruentata ^E
Rhodopsalta microdora ^E
Cixiidae
Aka duniana ^E
Aka finitima ^E
Aka rhodeae ^E
Cermada inexpectata ^E
Huttia nigrifrons ^E
Koroana ruffifrons ^E
Parasemo hutchersoni ^E
Semo clypeatus ^E
Semo transinsularis ^E
Tiriteana clarkei ^E
Zeoliarus atkinsoni ^E
Zeoliarus oppositus ^E
Delphacidae
Nilaparvata myersi ^E
Sulix miridianalis ^E
Ugyops (Ugyops) rhadamanthus ^E
Dictyopharidae
Thanatodictya (Niculda) tillyardi ^E
Flatidae
Anzora unicolor ^A
Myerslopiidae
Myerslopiia magna magna ^E
Pemmation parvum ^E
Pemmation verrucosum ^E

WA

25 taxa

E, 19; N, 1; A, 5; R, 1.

Aphrophoridae*Carystoterpa maori*^E*Carystoterpa vagans*^E**Cicadellidae***Anzygina zealandica*^N*Arawa variegata*^E*Edwardsiana froggatti*^A*Rhytidodus decimaquartus*^A**Cicadidae***Amphipsalta cingulata*^E*Amphipsalta strepitans*^E*Amphipsalta zelandica*^E*Kikihia cutora cumberi*^E*Kikihia muta muta*^E*Kikihia scutellaris*^E*Maoricicada cassiope*^E*Maoricicada hamiltoni*^E*Notopsalta sericea*^E**Cixiidae***Koroana rufifrons*^E*Zeoliarus oppositus*^E**Delphacidae***Notogryps melanthus*^{E, R}*Toya dryope*^A**Derbidae***Eocenchrea maorica*^E**Flatidae***Anzora unicolor*^A*Siphanta acuta*^A**Myerslopiidae***Pemmaton asperum asperum*^E*Pemmaton parvum*^E*Pemmaton terrestre*^E**WI**

39 taxa

E, 31; N, 2; A, 6; R, 2.

Achilidae*Agandecca annectens*^E**Aphrophoridae***Carystoterpa fingens*^E*Carystoterpa minor*^E*Carystoterpa vagans*^E*Philaenus spumarius*^A**Cicadellidae***Anzygina toetoe*^E*Anzygina zealandica*^N*Edwardsiana froggatti*^A*Idiocerus distinguendus*^A*Maiestas knighti*^N*Matatua maorica*^{E, R}*Xestocephalus ovalis*^E**Cicadidae***Amphipsalta cingulata*^E*Amphipsalta zelandica*^E*Kikihia cutora cumberi*^E*Kikihia muta muta*^E*Kikihia scutellaris*^E*Maoricicada hamiltoni*^E*Notopsalta sericea*^E*Rhodopsalta cruentata*^E*Rhodopsalta leptomera*^E**Cixiidae***Aka finitima*^E*Koroana rufifrons*^E*Zeoliarus oppositus*^E**Delphacidae***Anchodelphax olenus*^E*Eorissa cicatrifrons*^E*Nilaparvata myersi*^E*Notohyus erosus*^E*Sulix insecutor*^{E, R}*Sulix miridianalis*^E*Sulix tasmani*^E*Sulix vetranio*^E*Ugyops (Paracona) pelorus*^E*Ugyops (Ugyops) caelatus*^E**Derbidae***Eocenchrea maorica*^E**Flatidae***Anzora unicolor*^A*Siphanta acuta*^A**Myerslopiidae***Pemmaton verrucosum*^E**Ricaniidae***Scolypopa australis*^A**WN**

73 taxa

E, 63; N, 6; A, 4; R, 5.

Achilidae*Agandecca annectens*^E**Aphrophoridae***Carystoterpa aurata*^{E, R}*Carystoterpa fingens*^E*Carystoterpa ikana*^E*Carystoterpa maori*^E*Carystoterpa vagans*^E*Philaenus spumarius*^A*Pseudaphronella jactator*^E**Cicadellidae***Anzygina zealandica*^N*Arawa variegata*^E*Batracomorpha adventitiosus*^N*Batracomorpha angustatus*^{N?}*Limotettix awae*^E*Maiestas knighti*^N*Maiestas vetus*^N*Nesoclutha phryne*^N*Novothybris cassiniae*^E*Novothybris maorica*^{E, R}*Novothybris punctata*^{E, R}*Novothybris tararua*^{E, R}*Novothybris zealandica*^E*Paracephaleus hudsoni*^E*Scaphetus brunneus*^E*Scaphetus simus*^E*Xestocephalus ovalis*^E*Zelopsis nothofagi*^E**Cicadidae***Amphipsalta cingulata*^E*Amphipsalta strepitans*^E*Amphipsalta zelandica*^E*Kikihia cauta*^E*Kikihia cutora cumberi*^E*Kikihia dugdalei*^E*Kikihia laneorum*^E*Kikihia muta muta*^E*Kikihia muta pallida*^E*Kikihia ochrina*^E*Kikihia scutellaris*^E*Kikihia subalpina*^E*Maoricicada campbelli*^E*Maoricicada hamiltoni*^E*Maoricicada iolanthe*^E*Maoricicada myersi*^{E, R}*Notopsalta sericea*^E*Rhodopsalta cruentata*^E*Rhodopsalta leptomera*^E**Cixiidae***Aka duniana*^E*Aka finitima*^E*Huttia nigrifrons*^E*Koroana rufifrons*^E*Malpha muiri*^E*Semo transinsularis*^E*Tiriteana clarkei*^E*Zeoliarus atkinsoni*^E*Zeoliarus oppositus*^E**Delphacidae***Anchodelphax hagnon*^E*Anchodelphax olenus*^E*Eorissa cicatrifrons*^E*Nilaparvata myersi*^E*Sulix miridianalis*^E*Sulix tasmani*^E*Sulix vetranio*^E*Ugyops (Paracona) pelorus*^E*Ugyops (Ugyops) caelatus*^E*Ugyops (Ugyops) rhadamanthus*^E**Derbidae***Eocenchrea maorica*^E**Dictyopharidae***Thanatodictya (Niculda) tillyardi*^E**Flatidae***Anzora unicolor*^A*Siphanta acuta*^A**Myerslopiidae***Pemmaton asperum asperum*^E*Pemmaton parvum*^E*Pemmaton terrestre*^E*Pemmaton verrucosum*^E**Ricaniidae***Scolypopa australis*^A

WO

25 taxa

E, 19; N, 2; A, 4; R, 0.

Aphrophoridae

Carystoterpa ikana^E
Carystoterpa vagans^E
Pseudaphronella jactator^E

Cicadellidae

Anzygina zealandica^N
Arawa variegata^E
Maiestas vetus^N
Rhytidodus decimaquartus^A
Scaphetus brunneus^E
Xestocephalus ovalis^E

Cicadidae

Amphipsalta cingulata^E
Amphipsalta zelandica^E
Kikihia cutora cumberi^E
Kikihia cutora cutora^E
Kikihia dugdalei^E
Maoricicada iolanthe^E

Cixiidae

Aka rhodeae^E
Koroana rufifrons^E
Tiriteana clarkei^E
Zeoliarus oppositus^E

Delphacidae

Nilaparvata myersi^E

Derbidae

Eocenchrea maorica^E

Flatidae

Anzora unicolor^A
Siphanta acuta^A

Myerslopiidae

Pemmaton parvum^E

Ricaniidae

Scolypopa australis^A

South Island**BR**

49 taxa

E, 45; N, 2; A, 2; R, 1.

Achilidae

Agandecca annectens^E

Aphrophoridae

Carystoterpa maori^E
Carystoterpa vagans^E

Cicadellidae

Anzygina ramsayi^E
Anzygina zealandica^N
Arawa variegata^E
Horouta inconstans^E
Limotettix awae^E
Nesoclutha phryne^N
Novothybris cithara^E
Novothybris hinemoa^E

Novothybris peregrina^E
Novothybris vagans^E
Novothybris zealandica^E
Paracephaleus hudsoni^E
Paradorydium philpotti^E
Scaphetus brunneus^E
Scaphetus simus^E
Xestocephalus ovalis^E
Zelopsis nothofagi^E

Cicadidae

Amphipsalta zelandica^E
Kikihia angusta^E
Kikihia horologium^E
Kikihia muta muta^E
Kikihia subalpina^E
Maoricicada campbelli^E
Maoricicada cassiope^E
Maoricicada hamiltoni^E
Maoricicada mangu gourlayi^E
Maoricicada mangu mangu^E
Maoricicada nigra nigra^E
Maoricicada oromelaena^E
Maoricicada tenuis^E

Cixiidae

Aka westlandica^E
Koroana lanceoloti^E
Koroana rufifrons^E
Malpha cockcrofti^E
Malpha muiri^E
Semo clypeatus^E
Semo harrisi^E
Semo transinsularis^E
Zeoliarus atkinsoni^E
Zeoliarus oppositus^E

Dictyopharidae

Thanatodictya (Niculda) tillyardi^E

Flatidae

Siphanta acuta^A

Membracidae

Acanthuchus trispinifer^A

Myerslopiidae

Myerslophia magna amplificata^{E, R}
Pemmaton parvum^E
Pemmaton variabile variabile^E

CO

36 taxa

E, 26; N, 4; A, 6; R, 2.

Aphrophoridae

Philaenus spumarius^A

Cicadellidae

Anzygina zealandica^N
Arawa negata^E
Batracomorphus angustatus^{N?}
Horouta inconstans^E
Idiocerus distinguendus^A
Limotettix awae^E
Macrosteles fieberi^A
Maiestas knighti^N
Nesoclutha phryne^N

Novolopa falcata^E
Novolopa montivaga^E
Paradorydium aculeatum^{E, R}
Rhytidodus decimaquartus^A
Ribautiana tenerima^A
Scaphetus simus^E
Xestocephalus ovalis^E
Zelopsis nothofagi^E

Cicadidae

Amphipsalta strepitans^E
Kikihia angusta^E
Kikihia muta pallida^E
Kikihia rosea^E
Maoricicada campbelli^E
Maoricicada clamitans^E
Maoricicada nigra frigida^{E, R}
Maoricicada otagoensis otagoensis^E

Maoricicada phaeoptera^E

Rhodopsalta microdora^E

Cixiidae

Aka westlandica^E
Koroana lanceoloti^E
Zeoliarus oppositus^E

Delphacidae

Anchodelphax hagnon^E
Eorissa cicatrifrons^E

Dictyopharidae

Thanatodictya (Niculda) tillyardi^E

Flatidae

Siphanta acuta^A

Myerslopiidae

Pemmaton townsendi^E

DN

21 taxa

E, 18; N, 2; A, 1; R, 0.

Aphrophoridae

Carystoterpa vagans^E
Philaenus spumarius^A

Cicadellidae

Arawa negata^E
Batracomorphus adventitosus^N
Horouta inconstans^E
Nesoclutha phryne^N
Novothybris castor^E
Paracephaleus hudsoni^E
Scaphetus brunneus^E
Xestocephalus ovalis^E

Cicadidae

Amphipsalta zelandica^E
Kikihia angusta^E
Kikihia muta muta^E
Kikihia rosea^E
Kikihia subalpina^E
Rhodopsalta microdora^E

Cixiidae

Aka dunedinensis^E
Semo harrisi^E
Semo southlandiae^E

Zeoliarus oppositus ^E
Myerslopiidae
Pemmaton townsendi ^E

FD
 35 taxa
 E, 34; N, 1; A, 0; R, 3.

Achilidae
Agandecca annectens ^E
Aphrophoridae
Carystoterpa vagans ^E
Cicadellidae
Anzygina zealandica ^N
Arahura reticulata ^E
Arawa negata ^E
Arawa variegata ^E
Horouta inconstans ^E
Limotettix awae ^E
Maiestas knighti ^N
Novolopa falcata ^E
Novolopa infula ^{E, R}
Novolopa kuscheli ^E
Novolopa maculata ^E
Novothybris notialis ^E
Novothybris peregrina ^E
Novothybris vagans ^E
Novothybris zealandica ^E
Paradorydium philpotti ^E
Xestocephalus ovalis ^E
Zelopsis nothofagi ^E

Cicadidae
Amphipsalta zealandica ^E
Kikihia angusta ^E
Kikihia rosea ^E
Kikihia subalpina ^E
Maoricicada campbelli ^E
Maoricicada nigra nigra ^E
Maoricicada oromelaena ^E

Cixiidae
Aka westlandica ^E
Koroana arthuria ^E
Koroana lanceoloti ^E
Semo harrisi ^E
Zeoliarus oppositus ^E
Myerslopiidae
Myerslophia magna scabrata ^{E, R}
Myerslophia whakatipuensis ^{E, R}
Pemmaton townsendi ^E

KA
 23 taxa
 E, 22; N, 1; A, 0; R, 1.

Aphrophoridae
Carystoterpa fingens ^E
Carystoterpa vagans ^E
Cicadellidae
Anzygina zealandica ^N
Arawa negata ^E

Novothybris eylesi ^{E, R}
Scaphetus simus ^E
Zelopsis nothofagi ^E
Cicadidae
Amphipsalta strepitans ^E
Amphipsalta zealandica ^E
Kikihia horologium ^E
Kikihia muta muta ^E
Kikihia paxillulae ^E
Kikihia subalpina ^E
Maoricicada campbelli ^E
Maoricicada cassiope ^E
Maoricicada hamiltoni ^E
Maoricicada lindsayi ^E
Maoricicada mangu multicostata ^E
Rhodopsalta cruentata ^E

Cixiidae
Aka duniana ^E
Koroana rufifrons ^E
Zeoliarus oppositus ^E
Dictyopharidae
Thanatodictya (Niculda) tillyardi ^E

MB
 38 taxa
 E, 32; N, 2; A, 4; R, 3.

Achilidae
Agandecca annectens ^E
Cicadellidae
Arawa dugdalei ^E
Arawa negata ^E
Arawa variegata ^E
Batracomorphus angustatus ^{N?}
Edwardsiana froggatti ^A
Horouta inconstans ^E
Nesoclutha phryne ^N
Novothybris cassiniae ^E
Paradorydium watti ^{E, R}
Rhytidodus decimaquartus ^A
Scaphetus brunneus ^E
Zelopsis nothofagi ^E

Cicadidae
Amphipsalta strepitans ^E
Amphipsalta zealandica ^E
Kikihia angusta ^E
Kikihia horologium ^E
Kikihia muta muta ^E
Kikihia scutellaris ^E
Maoricicada alticola ^{E, R}
Maoricicada campbelli ^E
Maoricicada cassiope ^E
Maoricicada hamiltoni ^E
Maoricicada lindsayi ^E
Maoricicada mangu celer ^{E, R}
Maoricicada mangu multicostata ^E
Maoricicada oromelaena ^E
Maoricicada tenuis ^E
Rhodopsalta cruentata ^E
Cixiidae

Koroana lanceoloti ^E
Koroana rufifrons ^E
Semo clypeatus ^E
Zeoliarus oppositus ^E
Dictyopharidae
Thanatodictya (Niculda) tillyardi ^E
Flatidae
Anzora unicolor ^A
Myerslopiidae
Myerslophia magna magna ^E
Pemmaton parvum ^E
Ricaniidae
Scolypopa australis ^A

MC
 56 taxa
 E, 40; N, 5; A, 11; R, 3.

Achilidae
Agandecca annectens ^E
Aphrophoridae
Carystoterpa vagans ^E
Philaenus spumarius ^A
Cicadellidae
Anzygina dumbletoni ^{A?}
Anzygina zealandica ^N
Arahura reticulata ^E
Arawa negata ^E
Batracomorphus adventitosus ^N
Edwardsiana froggatti ^A
Edwardsiana lethierryi ^A
Eupteryx melissae ^A
Horouta inconstans ^E
Idiocerus distinguendus ^A
Kybos lindbergi ^A
Kybos smaragdula ^A
Limotettix awae ^E
Maiestas knighti ^N
Nesoclutha phryne ^N
Novothybris castor ^E
Novothybris pollux ^{E, R}
Paradorydium westwoodi ^{E, R}
Rhytidodus decimaquartus ^A
Ribautiana tenerima ^A
Scaphetus simus ^E
Xestocephalus ovalis ^E
Zelopsis nothofagi ^E
Cicadidae
Amphipsalta strepitans ^E
Amphipsalta zealandica ^E
Kikihia angusta ^E
Kikihia horologium ^E
Kikihia muta muta ^E
Kikihia muta pallida ^E
Kikihia ochrina ^E
Kikihia rosea ^E
Kikihia subalpina ^E
Maoricicada campbelli ^E
Maoricicada cassiope ^E
Maoricicada hamiltoni ^E

Maoricicada mangu mangu ^E
Maoricicada nigra nigra ^E
Maoricicada oromelaena ^E
Rhodopsalta microdora ^E
Cixiidae
Aka duniana ^E
Aka westlandica ^E
Koroana arthuria ^E
Koroana rufifrons ^E
Semo clypeatus ^E
Semo southlandiae ^E
Zeoliarus oppositus ^E
Delphacidae
Eorissa cicatrifrons ^E
Notohyus erosus ^E
Opiconsiva dilpa ^{N?}
Ugyops (Paracona) pelorus ^E
Flatidae
Anzora unicolor ^A
Siphanta acuta ^A
Myerslopiidae
Pemmation asperum cognatum ^{E, R}

MK

37 taxa

E, 29; N, 6; A, 2; R, 1.

Aphrophoridae
Philaenus spumarius ^A
Cicadellidae
Anzygina zealandica ^N
Arawa negata ^E
Batracomorphus adventitiosus ^N
Batracomorphus angustatus ^{N?}
Horouta inconstans ^E
Limotettix awae ^E
Limotettix pallidus ^{E, R}
Macrosteles fieberi ^A
Maiestas knighti ^N
Maiestas vetus ^N
Matatua montivaga ^E
Nesoclutha phryne ^N
Novothybris castor ^E
Scaphetus simus ^E
Xestocephalus ovalis ^E
Zelopsis nothofagi ^E
Cicadidae
Amphipsalta strepitans ^E
Kikihia angusta ^E
Kikihia horologium ^E
Kikihia muta pallida ^E
Kikihia rosea ^E
Kikihia subalpina ^E
Maoricicada campbelli ^E
Maoricicada clamitans ^E
Maoricicada hamiltoni ^E
Maoricicada mangu mangu ^E
Maoricicada nigra nigra ^E
Maoricicada oromelaena ^E
Maoricicada phaeoptera ^E

Rhodopsalta microdora ^E
Cixiidae
Koroana arthuria ^E
Koroana lanceloti ^E
Semo harrisi ^E
Semo southlandiae ^E
Zeoliarus oppositus ^E
Dictyopharidae
Thanatodictya (Niculda) tillyardi ^E

NC

33 taxa

E, 29; N, 2; A, 2; R, 0.

Achilidae
Agandecca annectens ^E
Aphrophoridae
Carystoterpa maori ^E
Carystoterpa vagans ^E
Philaenus spumarius ^A
Cicadellidae
Arawa negata ^E
Horouta inconstans ^E
Idiocerus distinguendus ^A
Maiestas vetus ^N
Nesoclutha phryne ^N
Novothybris castor ^E
Novothybris zealandica ^E
Xestocephalus ovalis ^E
Zelopsis nothofagi ^E
Cicadidae
Amphipsalta strepitans ^E
Amphipsalta zelandica ^E
Kikihia angusta ^E
Kikihia horologium ^E
Kikihia muta muta ^E
Kikihia paxillulae ^E
Maoricicada campbelli ^E
Maoricicada cassiope ^E
Maoricicada hamiltoni ^E
Maoricicada lindsayi ^E
Maoricicada mangu mangu ^E
Maoricicada mangu multicostata ^E
Maoricicada nigra nigra ^E
Maoricicada oromelaena ^E
Rhodopsalta cruentata ^E
Rhodopsalta microdora ^E
Cixiidae
Koroana arthuria ^E
Semo clypeatus ^E
Semo harrisi ^E
Zeoliarus oppositus ^E

NN

65 taxa

E, 50; N, 5; A, 10; R, 5.

Achilidae
Agandecca annectens ^E
Carystoterpa fingens ^E

Carystoterpa maori ^E
Carystoterpa vagans ^E
Cicadellidae
Anzygina dumbletoni ^{A?}
Anzygina zealandica ^N
Arawa dugdalei ^E
Arawa novella ^N
Arawa variegata ^E
Batracomorphus angustatus ^{N?}
Edwardsiana froggatti ^A
Euacanthella palustris ^A
Eupteryx melissae ^A
Horouta inconstans ^E
Limotettix awae ^E
Maiestas vetus ^N
Nesoclutha phryne ^N
Novolopa townsendi ^{E, R}
Novothybris cithara ^E
Novothybris hinemoa ^E
Novothybris zealandica ^E
Paracephaleus curtus ^E
Paracephaleus hudsoni ^E
Paradorydium cuspidis ^{E, R}
Paradorydium gourlayi ^{E, R}
Rhytidodus decimaquartus ^A
Ribautiana tenerrima ^A
Scaphetus brunneus ^E
Scaphetus simus ^E
Xestocephalus ovalis ^E
Zelopsis nothofagi ^E
Cicadidae
Amphipsalta strepitans ^E
Amphipsalta zelandica ^E
Kikihia horologium ^E
Kikihia muta muta ^E
Kikihia subalpina ^E
Maoricicada campbelli ^E
Maoricicada cassiope ^E
Maoricicada clamitans ^E
Maoricicada mangu gourlayi ^E
Maoricicada mangu mangu ^E
Maoricicada nigra nigra ^E
Maoricicada oromelaena ^E
Maoricicada tenuis ^E
Rhodopsalta cruentata ^E
Cixiidae
Aka duniana ^E
Aka westlandica ^E
Confuga persephone ^{E, R}
Koroana lanceloti ^E
Koroana rufifrons ^E
Semo clypeatus ^E
Semo harrisi ^E
Semo transinsularis ^E
Zeoliarus oppositus ^E
Delphacidae
Eorissa cicatrifrons ^E
Dictyopharidae
Thanatodictya (Niculda) tillyardi ^E
Flatidae
Anzora unicolor ^A

Siphanta acuta ^A**Membracidae***Acanthuchus trispinifer* ^A**Myerslopiidae***Myerslophia magna magna* ^E*Pemmaton insulare* ^{E, R}*Pemmaton parvum* ^E*Pemmaton townsendi* ^E*Pemmaton variabile variabile* ^E**Ricaniidae***Scolypopa australis* ^A**OL**

37 taxa

E, 30; N, 4; A, 3; R, 1.

Achilidae*Agandecca annectens* ^E**Aphrophoridae***Philaenus spumarius* ^A**Cicadellidae***Anzygina zealandica* ^N*Arahura reticulata* ^E*Arawa negata* ^E*Horouta inconstans* ^E*Idiocerus distinguendus* ^A*Limotettix awae* ^E*Maiestas knighti* ^N*Maiestas vetus* ^N*Matatua montivaga* ^E*Nesoclutha phryne* ^N*Novolopa maculata* ^E*Novothybris zealandica* ^E*Paradorydium sertum* ^{E, R}*Rhytidodus decimaquartus* ^A*Scaphetus brunneus* ^E*Xestocephalus ovalis* ^E*Zelopsis nothofagi* ^E**Cicadidae***Amphipsalta zelandica* ^E*Kikihia angusta* ^E*Kikihia muta muta* ^E*Kikihia rosea* ^E*Kikihia subalpina* ^E*Maoricicada campbelli* ^E*Maoricicada clamitans* ^E*Maoricicada nigra nigra* ^E*Maoricicada oromelaena* ^E*Maoricicada otagoensis otagoensis* ^E*Maoricicada phaeoptera* ^E*Rhodopsalta microdora* ^E**Cixiidae***Aka westlandica* ^E*Koroana arthuria* ^E*Koroana lanceoloti* ^E*Semo harrisi* ^E*Zeoliarus oppositus* ^E**Dictyopharidae***Thanatodictya (Niculda) tillyardi* ^E**SC**

21 taxa

E, 17; N, 1; A, 3; R, 0.

Aphrophoridae*Carystoterpa vagans* ^E*Philaenus spumarius* ^A**Cicadellidae***Anzygina zealandica* ^N*Horouta inconstans* ^E*Idiocerus distinguendus* ^A*Rhytidodus decimaquartus* ^A*Xestocephalus ovalis* ^E*Zelopsis nothofagi* ^E**Cicadidae***Amphipsalta strepitans* ^E*Amphipsalta zelandica* ^E*Kikihia angusta* ^E*Kikihia subalpina* ^E*Maoricicada campbelli* ^E*Maoricicada clamitans* ^E*Maoricicada mangu mangu* ^E*Maoricicada oromelaena* ^E*Maoricicada otagoensis otagoensis* ^E*Maoricicada phaeoptera* ^E*Rhodopsalta microdora* ^E**Cixiidae***Zeoliarus oppositus* ^E**Myerslopiidae***Pemmaton variabile austrinum* ^E**SD**

28 taxa

E, 26; N, 2; A, 0; R, 3.

Achilidae*Agandecca annectens* ^E**Aphrophoridae***Carystoterpa fingens* ^E*Carystoterpa maori* ^E*Carystoterpa vagans* ^E**Cicadellidae***Anzygina zealandica* ^N*Arahura gourlayi* ^{E, R}*Maiestas vetus* ^N*Novothybris hinemoa* ^E*Novothybris tararua* ^E*Paradorydium insulare* ^{E, R}*Scaphetus brunneus* ^E*Xestocephalus ovalis* ^E**Cicadidae***Amphipsalta strepitans* ^E*Amphipsalta zelandica* ^E*Kikihia muta muta* ^E*Kikihia scutellaris* ^E*Kikihia subalpina* ^E*Maoricicada campbelli* ^E*Maoricicada cassiope* ^E**Cixiidae***Aka duniana* ^E*Koroana rufifrons* ^E*Zeoliarus oppositus* ^E**Delphacidae***Sulix miridianalis* ^E*Ugyops (Paracona) pelorus* ^E**Dictyopharidae***Thanatodictya (Niculda) tillyardi* ^E**Myerslopiidae***Myerslophia magna magna* ^E*Pemmaton montis* ^{E, R}*Pemmaton parvum* ^E**SL**

32 taxa

E, 26; N, 4; A, 2; R, 3.

Aphrophoridae*Carystoterpa vagans* ^E**Cicadellidae***Anzygina barrattae* ^{E, R}*Anzygina zealandica* ^N*Arawa negata* ^E*Batracomorpha adventitiosus* ^N*Horouta inconstans* ^E*Idiocerus distinguendus* ^A*Limotettix awae* ^E*Nesoclutha phryne* ^N*Novolopa montivaga* ^E*Novothybris notialis* ^E*Rhytidodus decimaquartus* ^A*Scaphetus brunneus* ^E*Scaphetus simus* ^E*Xestocephalus ovalis* ^E*Zelopsis nothofagi* ^E**Cicadidae***Amphipsalta zelandica* ^E*Kikihia angusta* ^E*Kikihia rosea* ^E*Maoricicada otagoensis maceweni* ^{E, R}*Rhodopsalta microdora* ^E**Cixiidae***Aka dunedinensis* ^E*Aka westlandica* ^E*Koroana arthuria* ^E*Koroana rufifrons* ^E*Semo harrisi* ^E*Semo southlandiae* ^E*Zeoliarus oppositus* ^E**Delphacidae***Opiconsiva dilpa* ^{N?}**Myerslopiidae***Myerslophia tawhai* ^{E, R}*Pemmaton townsendi* ^E*Pemmaton variabile austrinum* ^E

WD

34 taxa

E, 26; N, 5; A, 3; R, 1.

Achilidae*Agandecca annectens* ^E**Aphrophoridae***Carystoterpa vagans* ^E**Cicadellidae***Anzygina zealandica* ^N*Arawa negata* ^E*Arawa novella* ^N*Idiocerus distinguendus* ^A*Limotettix awae* ^E*Maiestas knighti* ^N*Maiestas vetus* ^N*Novothybris zealandica* ^E*Ribautiana tenerrima* ^A*Scaphetus brunneus* ^E*Xestocephalus ovalis* ^E**Cicadidae***Amphipsalta zelandica* ^E*Kikihia horologium* ^E*Kikihia muta* ^E*Kikihia rosea* ^E*Kikihia subalpina* ^E*Maoricicada campbelli* ^E*Maoricicada hamiltoni* ^E*Maoricicada nigra nigra* ^E*Maoricicada oromelaena* ^E*Rhodopsalta cruentata* ^E**Cixiidae***Aka westlandica* ^E*Koroana lanceloti* ^E*Malpha cockcrofti* ^E*Semo harrisi* ^E*Zeoliarus oppositus* ^E**Delphacidae***Opiconsiva dilpa* ^{N?}**Flatidae***Siphanta acuta* ^A**Myerslopiidae***Pemmaton parvum* ^E*Pemmaton simile* ^{E, R}*Pemmaton townsendi* ^E*Pemmaton variabile variabile* ^E**Stewart Island**

20 taxa

E, 18; N, 1; A, 1; R, 1.

Aphrophoridae*Carystoterpa vagans* ^E**Cicadellidae***Arawa negata* ^E*Arawa novella* ^N*Novolopa kuscheli* ^E*Novothybris notialis* ^E*Novothybris zealandica* ^E*Paradorydium philpotti* ^E*Scaphetus brunneus* ^E*Scaphetus simus* ^E*Zelopsis nothofagi* ^E**Cicadidae***Amphipsalta zelandica* ^E*Kikihia angusta* ^E*Kikihia rosea* ^E*Kikihia subalpina* ^E**Cixiidae***Aka westlandica* ^E*Koroana arthuria* ^E*Semo harrisi* ^E*Zeoliarus oppositus* ^E**Myerslopiidae***Myerslophia rakiuraensis* ^{E, R}**Ricaniidae***Scolypopa australis* ^A**Offshore Islands****CH**

13 taxa

E, 8; N, 4; A, 1; R, 4.

Aphrophoridae*Carystoterpa tristis* ^{E, R}**Cicadellidae***Anzygina zealandica* ^N*Arawa novella* ^N*Eupteryx melissae* ^A*Limotettix awae* ^E*Maiestas knighti* ^N*Novothybris solitaria* ^{E, R}*Xestocephalus ovalis* ^E**Cicadidae***Kikihia longula* ^{E, R}**Cixiidae***Chathamaka andrej* ^{E, R}**Delphacidae***Anchodelphax olenus* ^E*Opiconsiva dilpa* ^{N?}*Ugyops (Paracona) pelorus* ^E**KE**

13 taxa

E, 5; N, 5; A, 3; R, 4.

Aphrophoridae*Carystoterpa subtacta* ^{E, R}**Cicadellidae***Balclutha lucida* ^{A?}*Balclutha viridinervis* ^{A?}*Batracomorphus angustatus* ^{N?}*Exitianus plebeius* ^N*Maiestas samuelsoni* ^N*Maiestas vetus* ^N*Orosius argentatus* ^A**Cicadidae***Kikihia cutora exulis* ^{E, R}**Cixiidae***Cermada kermadecensis* ^{E, R}**Delphacidae***Sardia rostrata pluto* ^N*Ugyops (Paracona) pelorus* ^E*Ugyops (Paracona) raouli* ^{E, R}**TH**

23 taxa

E, 18; N, 4; A, 1; R, 4.

Aphrophoridae*Basilioterpa bullata* ^{E, R}*Carystoterpa fingens* ^E*Carystoterpa trimaculata* ^{E, R}**Cicadellidae***Anzygina zealandica* ^N*Arahura dentata* ^E*Arawa variegata* ^E*Batracomorphus adventitosus* ^N*Batracomorphus angustatus* ^{N?}*Eupteryx melissae* ^A*Maiestas knighti* ^N*Novothybris notata* ^E*Xestocephalus ovalis* ^E**Cicadidae***Amphipsalta cingulata* ^E*Amphipsalta zelandica* ^E*Notopsalta sericea* ^E**Cixiidae***Cermada tiregia* ^{E, R}*Zeoliarus oppositus* ^E**Delphacidae***Anchodelphax olenus* ^E*Nilaparvata myersi* ^E*Sulix miridialis* ^E*Ugyops (Paracona) pelorus* ^E*Ugyops (Ugyops) caelatus* ^E**Myerslopiidae***Myerslophia tiregia* ^{E, R}

Appendix G. Type localities of valid Auchenorrhyncha taxa from New Zealand.

AK Auckland

- Auckland
Carystoterpa subvirescens (Aphrophoridae)
Kikihia ochrina (Cicadidae)
Limotettix awae (Cicadellidae)
- Auckland?
Aka finitima (Cixiidae)
Carystoterpa fingens (Aphrophoridae)
Cermada punctimargo (Cixiidae)
- Greenlane, Auckland
Anzygina agni (Cicadellidae)
- Nihotupu, Waitakere Ranges
Ugyops (Ugyops) rhadamanthus (Delphacidae)
- Waitakere Ranges
Pemmaton bifurca (Myerslopiidae)
- Waitemata Harbour?
Notopsalta sericea (Cicadidae)

BP Bay of Plenty

- Blue Lake, Rotorua
Carystoterpa minor (Aphrophoridae)
- Mamaku
Tiriteana clarkei (Cixiidae)
- Mount Te Aroha
Carystoterpa vagans (Aphrophoridae)
Myerslophia tearohai (Myerslopiidae)
- Ohope Beach
Ugyops (Paracona) pelorus (Delphacidae)
- Rotorua
Sulix miridianaalis (Delphacidae)
- Whakarewarewa, Rotorua
Kikihia dugdalei (Cicadidae)

BR Buller

- Bullock Creek, Punakaiki
Myerslophia magna amplificata (Myerslopiidae)
- Lake Rotoiti
Carystoterpa maori (Aphrophoridae)
- Westport, Island Creek area
Novothymbris cithara (Cicadellidae)

CH Chatham Islands

- Chatham Island, Awatotara Forest
Novothymbris solitaria (Cicadellidae)
- Pitt Island
Kikihia longula (Cicadidae)
- Pitt Island, Glory Scenic Reserve
Chathamaka andrei (Cixiidae)

CL Coromandel

- Cuvier Island
Arahura dentata (Cicadellidae)

CO Central Otago

- Mount Bitterness
Paradorydium aculeatum (Cicadellidae)
- Old Man Range
Novolopa montivaga (Cicadellidae)
- Old Man Range, near Obelisk
Maoricicada nigra frigida (Cicadidae)

DN Dunedin

- Lake Mahinerangi
Novothymbris castor (Cicadellidae)
- Ross Creek Reservoir
Aka dunedinensis (Cixiidae)
- Waikouaiti?
Kikihia angusta (Cicadidae)
Kikihia rosea (Cicadidae)

FD Fiordland

- Bauza Island
Aka westlandica (Cixiidae)
- Cleughearn Peak
Maoricicada oromelaena (Cicadidae)
- Eglinton Valley
Novothymbris peregrina (Cicadellidae)
- Hump Ridge
Paradorydium philpotti (Cicadellidae)
- Lake Marian Track
Myerslophia whakatipuensis (Myerslopiidae)
- Monowai, Road to Mount Burns
Novothymbris vagans (Cicadellidae)
- Mount Barber
Novolopa infula (Cicadellidae)
- Mount Burns
Arahura reticulata (Cicadellidae)
- Mount Grey
Novolopa falcata (Cicadellidae)
- Wilmot Pass
Myerslophia magna scabrata (Myerslopiidae)

HB Hawkes Bay

- Cape Kidnappers
Rhodopsalta microdora (Cicadidae)

KA Kaikoura

- Charwell Forks
Kikihia paxilluluae (Cicadidae)
- Dee Stream, Kekerengu
Amphipsalta strepitans (Cicadidae)
- Mount Snowflake
Novothymbris eylesi (Cicadellidae)

KE Kermadec Islands

- Kermadec Islands
Kikihia cutora exulis (Cicadidae)
- Raoul Island
Cermada kermadecensis (Cixiidae)
Ugyops (Paracona) raouli (Delphacidae)
- Raoul Island, North Terrace
Maiestas samuelsoni (Cicadellidae)

MB Marlborough

- Altamarlock Peak
Arawa dugdalei (Cicadellidae)
Maoricicada mangu multicostata (Cicadidae)
- Fell Peak
Arawa variegata (Cicadellidae)
- Island Saddle
Maoricicada tenuis (Cicadidae)
- Molesworth
Paradorydium wattii (Cicadellidae)
- Turk Ridge, Crimea Range
Maoricicada alticola (Cicadidae)
Maoricicada mangu celer (Cicadidae)

MC Mid Canterbury

- Christchurch, Near
Paradorydium westwoodi (Cicadellidae)
 McLennans Bush, Christchurch
Novothybris pollux (Cicadellidae)
Pemmaton asperum cognatum (Myerslopiidae)
 Porters Pass
Maoricicada mangu mangu (Cicadidae)
 Riccarton, Christchurch
Anzygina dumbletoni (Cicadellidae)
 Tumbledown Bay, Banks Peninsula
Notohyus erosus (Delphacidae)

MK Mackenzie

- Hooker Valley, North of Hermitage
Horouta inconstans (Cicadellidae)
 Kea Point Track, Mount Cook
Kikihia horologium (Cicadidae)
 Mackenzie Pass
Maoricicada clamitans (Cicadidae)
 Mount Sebastopol, Red Lakes [=Tarns]
Matatua montivaga (Cicadellidae)
 Sealy Range, Mount Cook
Kikihia muta pallida (Cicadidae)
 Tasman Valley, Glen Tanner Station
Maiestas knighti (Cicadellidae)
 Tasman Valley, North of Lake Pukaki
Limotettix pallidus (Cicadellidae)
 Tasman Valley, South of Ball Hut
Maiestas vetus (Cicadellidae)

NC North Canterbury

- Arthur's Pass
Koroana arthuria (Cixiidae)
Maoricicada hamiltoni (Cicadidae)
 Mount Grey
Maoricicada lindsayi (Cicadidae)

ND Northland

- Bay of Islands
Amphipsalta cingulata (Cicadidae)
 Kaitiaki
Carystoterpa chelyon (Aphrophoridae)
 Mangamuka Range
Carystoterpa ikana (Aphrophoridae)
 Mangonui
Notogryps ithoma (Delphacidae)
 North Cape, Kerr Point
Carystoterpa minima (Aphrophoridae)
 Omahuta State Forest
Huttia northlandica (Cixiidae)
 Paihia
Scaphetus brunneus (Cicadellidae)
 Unuwahao
Novothybris extremitatis (Cicadellidae)
 Whangarei
Batracomorphus adventitiosus (Cicadellidae)
Novothybris notata (Cicadellidae)

NN Nelson

- Aniseed Valley
Zelopsis nothofagi (Cicadellidae)
 Council Cave, Takaka

Confuga persephone (Cixiidae)

- Dun Mountain
Aka duniana (Cixiidae)
Maoricicada cassiope (Cicadidae)
Maoricicada mangu gourlayi (Cicadidae)
Novothybris zealandica (Cicadellidae)
Thanatodictya (Niculda) tillyardi (Dictyopharidae)
 Mount Arthur
Paradorydium cuspis (Cicadellidae)
 Mount Augustus
Paracephaleus curtus (Cicadellidae)
 Mount Owen
Novolopa townsendi (Cicadellidae)
 Nelson
Novothybris hinemoa (Cicadellidae)
Scaphetus simus (Cicadellidae)
 Palmers Bush, Nelson
Pemmaton insulare (Myerslopiidae)
 Tahunanui, Nelson
Paradorydium gourlayi (Cicadellidae)
 Takaka Hill
Pemmaton variabile variabile (Myerslopiidae)
 Tasman Bay
Amphipsalta zelandica (Cicadidae)

NZ New Zealand

- Agandecca annectens* (Achilidae)
Arawa negata (Cicadellidae)
Eocenchrea maorica (Derbidae)
Carystoterpa trimaculata (Aphrophoridae)
Koroana ruffifrons (Cixiidae)
Rhodopsalta cruentata (Cicadidae)
Semo clypeatus (Cixiidae)
Ugyops (Ugyops) caelatus (Delphacidae)
Zeoliarus oppositus (Cixiidae)

OL Otago Lakes

- Coronet Peak
Maoricicada otagoensis otagoensis (Cicadidae)
Novolopa maculata (Cicadellidae)
Paradorydium sertum (Cicadellidae)
 Dart Hut
Koroana lanceoloti (Cixiidae)
 Sentinel Peak
Maoricicada phaeoptera (Cicadidae)

RI Rangitikei

- Ruahine Range
Anzygina ramsayi (Cicadellidae)

SC South Canterbury

- Kelceys Bush, Waimate
Pemmaton variabile austrinum (Myerslopiidae)

SD Marlborough Sounds

- Mount Stokes
Pemmaton montis (Myerslopiidae)
 Ship Cove?
Kikihia muta muta (Cicadidae)
 Stephens Island
Arahura gourlayi (Cicadellidae)
Paradorydium insulare (Cicadellidae)

SI Stewart Island

Mount Rakeahua

- Novolopa kuscheli* (Cicadellidae)
Novothybris notialis (Cicadellidae)

Oban

- Myerslophia rakiuraensis* (Myerslophiidae)

SL Southland

Ajax Swamp

- Anzygina barrattae* (Cicadellidae)

Cheviot Face, Takitimu Range

- Maoricicada otagoensis maceweni* (Cicadidae)

Longwood Range

- Myerslophia tawhai* (Myerslophiidae)

Tower Peak, Takitimu Range

- Semo southlandiae* (Cixiidae)

TH Three Kings Islands

Great Island, Castaway Camp

- Cermada triregia* (Cixiidae)

Great Island, Tasman Valley

- Myerslophia triregia* (Myerslophiidae)

West Island

- Basilioterpa bullata* (Aphrophoridae)

TO Taupo

Mangatawai Stream

- Kikihia cutora cumberi* (Cicadidae)

Ohakune

- Arawa pulchra* (Cicadellidae)
Kikihia cauta (Cicadidae)
Limottetix harrisi (Cicadellidae)
Pemmation parvum (Myerslophiidae)

Opepe Historical Reserve

- Kikihia laneorum* (Cicadidae)

Waimarino River

- Myerslophia magna magna* (Myerslophiidae)

Waipapa Reserve, Pureora State Forest Park

- Aka rhodeae* (Cixiidae)
Cermada inexpectata (Cixiidae)
Parasemo hutchersoni (Cixiidae)

WA Wairarapa

Puketoi

- Notogryps melanthus* (Delphacidae)

WD Westland

Lake Wahapo

- Pemmation townsendi* (Myerslophiidae)

Mount Hercules

- Pemmation simile* (Myerslophiidae)

Oтира

- Malpha cockcrofti* (Cixiidae)
Maoricicada campbelli (Cicadidae)

Temple Basin

- Maoricicada nigra nigra* (Cicadidae)

"West Coast"

- Semo harrisi* (Cixiidae)

WI Wanganui

Bruce Park, Hunterville

- Pemmation verrucosum* (Myerslophiidae)

Foxton

- Sulix vetranio* (Delphacidae)

Longacre

- Matatua maorica* (Cicadellidae)

Paiaika

- Anchodelphax olenus* (Delphacidae)
Anzygina toetoe (Cicadellidae)
Sulix insecutor (Delphacidae)

WN Wellington

Breaker Bay, Wellington

- Paracephaleus hudsoni* (Cicadellidae)

Day's Bay

- Kikihia cauta* (Cicadidae)

Gollans Valley

- Zeoliarus atkinsoni* (Cixiidae)

Karori, Wellington

- Kikihia cauta* (Cicadidae)
Kikihia subalpina (Cicadidae)
Maoricicada iolanthe (Cicadidae)

Levin

- Eorissa cicatrifrons* (Delphacidae)

Lyll Bay, Wellington

- Rhodopsalta leptomera* (Cicadidae)

Mount Alpha

- Malpha muiri* (Cixiidae)
Nilaparvata myersi (Delphacidae)
Novothybris tararua (Cicadellidae)

Orongorongo Field Station

- Pemmation terrestre* (Myerslophiidae)

Orongorongo River

- Maoricicada myersi* (Cicadidae)

Otaki Forks

- Pemmation asperum asperum* (Myerslophiidae)

Silverstream

- Carystoterpa aurata* (Aphrophoridae)

Tararua Range

- Anzygina zealandica* (Cicadellidae)

Tararua Range, Dundas Hut

- Semo transinsularis* (Cixiidae)

Titahi Bay

- Anchodelphax hagnon* (Delphacidae)

Upper Hutt

- Huttia nigrifrons* (Cixiidae)

Waikanae

- Sulix tasmani* (Delphacidae)

Wainuiomata

- Novothybris maorica* (Cicadellidae)

Wellington

- Kikihia cauta* (Cicadidae)
Novothybris cassiniaie (Cicadellidae)
Novothybris punctata (Cicadellidae)
Xestocephalus ovalis (Cicadellidae)

Appendix H. Endemic species currently known from 10 populations or fewer.

Aphrophoridae

Basilioterpa bullata
Carystoterpa aurata
Carystoterpa chelyon
Carystoterpa ikana
Carystoterpa minima
Carystoterpa minor
Carystoterpa subtacta
Carystoterpa subvirescens
Carystoterpa trimaculata
Carystoterpa tristis

Cicadellidae

Anzygina barrattae
Anzygina ramsayi
Anzygina toetoe
Arahura dentata
Arahura gourlayi
Arahura reticulata
Arawa dugdalei
Limotettix harrisi
Limotettix pallidus
Matatua maorica
Matatua montivaga
Novolopa falcata
Novolopa infula
Novolopa kuscheli
Novolopa maculata
Novolopa montivaga
Novolopa townsendi
Novothybris cassiniae
Novothybris cithara
Novothybris extremitatis
Novothybris eylesi
Novothybris hinemoa
Novothybris maorica
Novothybris peregrina
Novothybris pollux
Novothybris punctata
Novothybris solitaria
Novothybris tararua
Novothybris vagans
Paracephaleus curtus

Paradorydium aculeatum
Paradorydium cuspidis
Paradorydium gourlayi
Paradorydium insulare
Paradorydium philpotti
Paradorydium sertum
Paradorydium watti
Paradorydium westwoodi

Cicadidae

Kikihia cutora exulis
Kikihia muta pallida
Kikihia paxilluluae
Maoricicada alticola
Maoricicada mangu celer
Maoricicada mangu gourlayi
Maoricicada myersi
Maoricicada nigra frigida
Maoricicada otagoensis maceweni
Rhodopsalta leptomera

Cixiidae

Aka dunedinensis
Aka rhodeae
Cermada kermadecensis
Cermada triregia
Chathamaka andrei
Confuga persephone
Huttia northlandica
Malpha cockcrofti
Malpha muiri
Parasemo hutchisoni
Semo southlandiae
Semo transinsularis

Delphacidae

Anchodelphax hagnon
Anchodelphax olenus
Eorissa cicatrifrons
Notogryps ithoma
Notogryps melanthus
Notohyus erosus
Sulix insecutor
Sulix vetranio
Ugyops (Paracona) raouli

Myerslopiidae

Myerslopiia magna amplificata
Myerslopiia magna scabrata
Myerslopiia rakiuraensis
Myerslopiia tawhai
Myerslopiia tearohai
Myerslopiia triregia
Myerslopiia whakatipuensis
Pemmation asperum asperum
Pemmation asperum cognatum
Pemmation bifurca
Pemmation insulare
Pemmation montis
Pemmation simile
Pemmation terrestre
Pemmation variabile austrinum
Pemmation verrucosum

APHROPHORIDAE



Basilioterpa bullata

THREE KINGS IS
West I.
19. II. 1983
CF8404W
On *Entellia*
arborescens

TYPE



Carystoterpa ikana

Brewer Summit
Inangahua hills
82m, 19.XII.1966
K.A.J. Wise
Mangonui Co.,
North Island
NEW ZEALAND
AUCKLAND MUSEUM

PREPARED
Carystoterpa
ikana
Museum

AMNZ 21716
AUCKLAND MUSEUM
NEW ZEALAND



Carystoterpa maori

NEW ZEALAND IN
SEAS Research
Sampling area
10 May 2016
L.L. Green

Sampling
Station
Mangonui area

N.Z. entomological
collection, 640
Te Araroa, 211
2010, Auckland
100 200 400

♂

PREPARED
Carystoterpa
maori
Museum



Carystoterpa minima

Cliff tops
Koffi Pt.
North Cape area
6.XII.1967
K.A.J. Wise
Mangonui Co.,
North Island
NEW ZEALAND
AUCKLAND MUSEUM

PREPARED
Carystoterpa
minima
Museum

AMNZ 21717
AUCKLAND MUSEUM
NEW ZEALAND

Colour photographs of primary types of Auchenorrhyncha (pp. 149–191) deposited in New Zealand collections and museums. Presented alphabetically by families, genera and species. (Photographs: Birgit Rhode; *Kikihia muta pallida*, *K. subalpina* – Raymond Coory; *Maoricicada cassiope* – Jean-Claude Stahl). Scale bars = 1 mm unless otherwise indicated.



Carystoterpa minor

Miss L. S. Ratnas
23-1-59
J. L. Woodward
& R. Zaslavsky
♂
A.C. Arthropod
Collection, NZC
Entomology Bldg
POB 1, Auckland
NEW ZEALAND
COLLECTOR
Carystoterpa
minor
New Zealand



Carystoterpa vagans

M. S. Ratnas
23-1-59
J. L. Woodward
& R. Zaslavsky
♂
A.C. Arthropod
Collection, NZC
Entomology Bldg
POB 1, Auckland
NEW ZEALAND
COLLECTOR
Carystoterpa
vagans
New Zealand

CICADELLIDAE



Anzygina agni, male genitalia



DEPARTMENT OF SCIENCE
18 JAN. 1964
P. J. RAY

Entomology
Dorset
No. 1, 1974
New Zealand

Zyina
agni n.sp.
= HOLOTYPE
Bullough 1974



Anzygina barrattae

DEPARTMENT OF SCIENCE
18 JAN. 1964
P. J. RAY

Entomology
Dorset
No. 1, 1974
New Zealand

Zyina
barrattae n.sp.
= HOLOTYPE
Bullough 1974

DEPARTMENT OF SCIENCE
18 JAN. 1964
P. J. RAY

HOLOTYPE
*Anzygina
barrattae*
Bullough 1974



Anzygina ramsayi



Bullough Bay
Hawke Bay
13.9.64

22.6.74
P. J. RAY

Entomology

Zyina
ramsayi n.sp.
= HOLOTYPE
Bullough 1974



Anzygina toetoe



Zyina
toetoe n.sp.
= HOLOTYPE
Bullough 1974

Holotype

HOLOTYPE



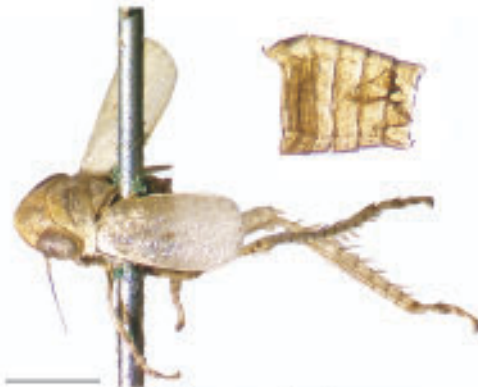
Anzygina zealandica

Type
 C. J. M. Myers Coll.
 H.M. 2017-786
 1978
 Erythronura
 zealandica
 ♂
 Myers



Arahura dentata

Type
 On woods grasses
 Summit Carter I.
 12.1.1972
 S.A.J. Finn
 Carter I.
 off South I.
 NEW ZEALAND
 ROCKLAND RESERVE
 Arahura
 dentata n.sp.
 on woods grass
 Carter I.
 AMNZ 21712
 S.A.J. Finn
 1972



Arahura gourlayi

Type
 Stephen's Isl.
 14.28 - 1 - 33
 E.S. Gourlay
 E.S. Gourlay
 Dec. 1970
 Int. Det.
 Arahura
 gourlayi n.sp.
 on Halaetia
 1970



Arahura reticulata

Type
 1979
 Hunter
 Mts
 Mt. Burns
 1500m
 Newpouri
 Exp. Jan 79
 J. McInerney
 Arahura
 reticulata n.sp.
 on Halaetia
 1979



Arawa dugdalei

Holo-
type
Aitimu Creek
4800-5400'
278470
J.S. Dugdale
Entomology
Division
D.S.I.R.
New Zealand
Arawa
dugdalei n.sp.
det. HOLOTYPE
J. Knight 1974



Arawa pulchra

Holo-
type
Otaheke
12.2.46
45 mgms
English
Gumms
J.G. Wynn Coll.
B.M. 186-788
British Museum
Loan No. 4128
Arawa
pulchra n.sp.
det. HOLOTYPE
J. Knight 1974



Arawa variegata

Holo-
type
NEW ZEALAND:
Nelson Prov., Mt. Fall,
Mt. Richmond, 4300 ft.,
E.I.II. 1969
E.W. Valentine
Arawa
variegata n.sp.
det. HOLOTYPE
E.W. Valentine 1974



Batracomorpha adventitiosus

Type
Wanganui
22.12.66
15 mgms
Batracomorpha
adventitiosus n.sp.
J. W. Evans det., 1974



Horouta inconstans

Holo-
type

NEW ZEALAND:
Mt. Cook Nat. Park,
Hooker Valley, 2 miles
N. of Horstags,
3,400ft., 11.11.1972.
R.A.F.M.A. Mt. Cook
Expedn.: R.J. Knight,
& P.S. Broadfield,
B.M.1972-124.

Horouta
inconstans n.sp.
HOLOTYPE
11.11.1972



Limotettix awae

Type

Auckland
2-11-1962
J.G. Myers Coll.
B.N. 090-218.

Limotettix
Cicadula
awae
5 Myers



Limotettix harrisi

Holo-
type

Checked
1977
TR
paratized
Limotettix
harrisi n.sp.
HOLOTYPE
det
R.J. Knight 1974



Limotettix pallidus

Holo-
type

NEW ZEALAND:
South Island,
Tarron Valley,
N. of L. Pukohi,
2,000ft., 1.11.1972.
R.A.F.M.A. Mt. Cook
Expedn.: R.J. Knight,
& P.S. Broadfield,
B.M.1972-124.

Wetly area,
rough grass
and sedges.

Limotettix
pallidus n.sp.
HOLOTYPE
1.11.1972



Maiestas samuelsoni

Holo-
1978

HOLOTYPE ♂
Beech Hill,
St. Arsen, 196
N.Z. 1950

C. S. Samuelson
Collector

Geology: Elmore,
Erewhun, Whillonga

Entomology
Division
D.S.I.R.
New Zealand

Deltocephalus
samuelsoni sp.
n. 1978
Lange 1978



Maiestas vetus

Holo-
1978

NEW ZEALAND:
Mt. Cook Park, Park
Tasman Valley, 4
miles S. of Mt. Hut,
3,400 ft., 4.1.1975

R.A.F.M.A. Mt. Cook
Exped. - W.J. Knight,
& P.S. Bromfield,
B.M.1975-124

Low strata by
lateral erosion.

Deltocephalus
vetus sp.
n. 1978
Lange 1978



Matatua maorica

Type

Longitudo
30-32.50

124 ♂

J.G. Myers Coll.
B.M. 1907-700

Dicranolara
maorica
Myers



Matatua montivaga

Holo-
1978

NEW ZEALAND:
Mt. Cook Park, Park,
Mount Sefton, 3,
3,000 ft., 7.11.1975

Strata & grass
outcrop around
Red Lakes.

R.A.F.M.A. Mt. Cook
Exped. - W.J. Knight,
& P.S. Bromfield,
B.M.1975-124

Matatua montivaga sp.
n. 1978
Lange 1978



Novolopa falcata

Holo-
type

Turret Rd
Mt. Grey,
1900m

Male

Manopouri
Exp. Jan 70
J. Duplat

*Novolopa
falcata* n. sp.
det. HOLA + YPE
at Holotype 1972



Novolopa infula

Holo-
type

Mt. Barker
1500m

White Rd

9000-

Manopouri
Exp. Jan 70
A.C. Styles

*Novolopa
infula* n. sp.
det. HOLA + YPE
at Holotype 1972



Novolopa kuscheli

Holo-
type

Dr. Kuschel
2000m, 1968
at Manopouri

In
Cathart
Pharm.

Stewart I.
Exp. Feb. 1968

*Novolopa
kuscheli* n. sp.
det. HOLA + YPE
at Holotype 1972



Novolopa maculata

Holo-
type

Mt. Gower, Githonin
Exp. 1950 - 6000
det. J. L. Lachlan 1963

*Novolopa
maculata* n. sp.
det. HOLA + YPE
at Holotype 1972



Novolopa montivaga

Holo-
type

Old Man Range
17-1-65 5000'
L. Kuschei
J.I. Townsend

*Novolopa
montivaga* n.sp.
as HOLOTYPE
R.I. Knight 1972



Novolopa townsendi

NO. Curr. 2908
23-26-2002

J.I. Townsend &
W.P. Dawson

HOLOTYPE

*Avonella
townsendi* Evans
J. W. Evans det. 1988



Novothybris cassiniae

Type

Wellington
9-10-20

J.G. Myers Coll.
ICM 1167-788

HOLOTYPE
*Dicrocephala
cassiniae*
J. Myers



Novothybris castor

Holo-
type

L. Mahierrani
18-1-65 1700'
L. Kuschei
J.I. Townsend

*Hebe
odora*

*Novothybris
castor*
as HOLOTYPE
R. Knight 1973



Novothymbria cithara

Holo-type
 Swamp Swamps
 Island Creek Area
 Gosport, N.Z.
 28. X. 1970
 D. Knight Field Trip
 Novothymbria
 cithara
 as HOLOTYPE
 D. Knight 1973
 Entomology Museum
 Lincoln College



Novothymbria extremitatis

Holo-type
 Unakuhamed
 Spirits Bay
 18. 7. 66
 A. K. Walker
 Novothymbria
 extremitatis
 as HOLOTYPE
 D. Knight 1973



Novothymbria eyesi

Holo-type
 Mt. Surobiak, low slopes
 Cassioia leptophylla ssp.
 A.C. 10000 022-25/10/1961
 Novothymbria
 eyesi
 as HOLOTYPE
 D. Knight 1973



Novothymbria notata

Holo-type
 Unakuhamed
 NZ 15-12-66
 J.G. Myers Coll.
 B.M. 103-78A
 Novothymbria
 notata
 as HOLOTYPE
 D. Knight 1973



Novothybris notialis

Holo-
type
Mt. Hakarua
1000'-2000'
19 II. 68
G. Kuschel
Sewart I.
Exp. Feb. 1968
Novothybris
notialis
as HOLOTYPE
W. J. Knight 1973



Novothybris peregrina

Holo-
type
Eglington Vall.,
20-21.4.59,
J. I. Townsend
Novothybris
peregrina
as HOLOTYPE
W. J. Knight 1973



Novothybris pollux

Holo-
type
Mc. Lennan's Bush
9-10-12-41
E. S. Geurley
Novothybris
pollux
as HOLOTYPE
W. J. Knight 1973



Novothybris punctata

Holo-
type
Lindley's
9-11-53
T. Geurley
Novothybris
punctata
as HOLOTYPE
W. J. Knight 1973



Novothybris solitaria

Holo-
type
Awatotara
forest Hut
6001.19.11.67
Chatham I.
Exp. Feb. 1967
J. G. Myers
Novothybris
solitaria
no. HOLOTYPE
W. J. Myers 1973



Novothybris tararua

Type
1
89
Mr. Alpha
31.06
16.2.21
J. G. Myers Coll.
B.N. 1507-788
Diedrocephala
tararua
Myers



Novothybris vagans

Holo-
type
Manapouri 130m
above the Hut
on top of Mt. 447 -
3.1.70
J. G. Myers
Hunter
Mts
Manapouri
Exp. Jan 70
J. Townsend
Novothybris
vagens
no. HOLOTYPE
W. J. Myers 1973



Novothybris zealandica

Type
Drs Mr. Zeevi
2.7.70 - Lr
A. Philcox
J. G. Myers Coll.
B.N. 1507-788
Diedrocephala
zealandica
Myers



Paracephaleus curtus

Holo-
type

Dr. A. G. Rehn
Holotype, coll. by
J. W. Evans, 1972

Paracephaleus
curtus n.sp.

HOLOTYPE
J. W. Evans, 1972



Paracephaleus hudsoni

Type

Dr. A. G. Rehn
4.11.72

J. W. Evans Coll.
D. M. 1147-700

Cephaloleus
hudsoni
Evans



Paradorydium aculeatum

Holo-
type

Mt. Diablotus
18 km. N.
of Lago.

El Janti,
P. S. Ogdale
Litter 7/11/72

Paradorydium
aculeatum n.sp.
as **HOLOTYPE**
J. W. Evans, 1972



Paradorydium gourlayi

Tahara, N.E.
3.2.29
E.S. Gourlay

HOLOTYPE
Paradorydium
gourlayi Evans
J. W. Evans det., 1972



Paradorydium insulare

Staples, I. M. S.
1983 - 2nd + 3rd instars
(see pin 100) 2/11

Paradorydium insulare Evans
J. W. Evans det. 11/7

HOLOTYPE



Paradorydium philpotti

Type

Hump R.
2006
27/12/11

Paradorydium philpotti
B. Myers



Paradorydium sertum

Holo-
type

Mt. Corvax, Queensland
500' - 5000'
28.5.11. 2006 2.8.11

Paradorydium sertum n.sp.
det. HOLOTYPE
E. J. S. Myers IATA



Paradorydium watti

Holo-
type

Queensland
Vol 100m
Holeworth

21 March
J. C. Watt

HOLOTYPE

Paradorydium watti n.sp.
det. HOLOTYPE
E. J. S. Myers IATA



Scaphetus brunneus

Bay of Islands
New Zealand
T. C. Blackburn
*Scaphetus
brunneus*
Evans
N. W. Evans det. 1972

*Scaphetus
brunneus* Evans
LEICESTERSHIRE
det.
R. J. Kings, 1972

HOLOTYPE



Scaphetus simus

Holo-
type

Nelson, N.Z.,
27.6.63
E. S. Gourlay

*Scaphetus
simus* n.sp.
det.
HOLOTYPE
R. J. Kings, 1974



Zelopsis nothofagi

Type

Prisead Valley
29.12.63
E. S. Gourlay

*Zelopsis
nothofagi* Evans.
J. W. Evans det.

CICADIDAE

*Amphipsalta strepitans*

Des. Riv. Aukana
18. 2. 1890
C. N. Moulton 68a.

Lectotype of *C.
singulata* var. *obscura*
Moulton n.s. *strepitans*
(Kist.) nom. nov.

Lectotype of
Amphipsalta
strepitans (Kist.)
C. N. Fleming 1890.

LECTOTYPE

*Kikihia cutora cumberi*

TONGAREVA
Mangatawai
Stn. 3. 10. 1911.
25-3000 ft
cutora, 1000

Kikihia cutora
cumberi Fleming.
HOLOTYPE ♂

HOLOTYPE

Scale bars = 10 mm



Kikihia cutora exulis

Melanofallia cuneolata
var! cut-alfana
Kermadec Is. 1908

Melanofallia exulis
Hudson ♂ type

Kikihia cutora
exulis (Hudson)

LECTOTYPE



Kikihia dugdalei

Kermadec Is.
H. J. S.

Kikihia dugdalei Flem.
HOLOTYPE ♂

Scale bars = 10 mm

Scale bars = 10 mm



Kea Pl. track
Mt. Cook Nat. Park
2500'-3000' NGC Twp
18. 2. 1967
C. A. & M. A. Fleming

Kikihia horologium
Fleming, 1984

Kikihia horologium Fleming
HOLOTYPE ♂

HOLOTYPE

Kikihia horologium



TAUPO (12)
Opepe Reserve
10-2-71
J.S.C.-A.P.

Kikihia
= *laneorum*

Kikihia laneorum
Fleming, 1984

HOLOTYPE

Kikihia laneorum

Scale bars = 10 mm



Kikihia longula

LECTOTYPE

LECTOTYPE
Melanipsalta uncta
 var. *longula*
 Hudson, *Zealandia*
 p. 139-140
 R. C. Island ♂

Pittie
 Chatham Is.

204

2007.184.204



Kikihia muta pallida

Sealey Ra. Mt. Cook
 Feb. 1945
 D. Hudson (2N)

LECTOTYPE ♂

Melanipsalta muta
 var. *pallida* Hudson
 C. A. Fleming Des 1966.

LECTOTYPE

Scale bars = 10 mm

*Kikihia paxillulæ*

MARLBOROUGH
 QUARTZ POINTS
 ISLAND - New Zealand
 18-2-75 M.F.L.
Kikihia paxillulæ
 HOLOTYPE Fleming

HOLOTYPE

*Kikihia subalpina*

Karori, Wellington.
 Jan. 1883
 C. W. Hudson 1 ♀.
 Lectotype ♀
Plempsatha mulla
 var. *subalpina* Hudson
 C. A. Fleming Des. 1966.

LECTOTYPE

Scale bars = 10 mm



Maoricicada alticola

Turk Ridge, Crinwa Ra.
Upper Waikau V., M.B.
600-6900' on barren
leaves. 3 Feb. 71 JSB/JIT.
HOLOTYPE ♂

HOLOTYPE ♂
Maoricicada
alticola
Dugdale + Fleming
1978



Maoricicada campbelli

Para-
type

♂
10-1-20

J.G. Myers Coll.
E.M. 1047-118.

Melanopoda
campbelli
♀ Myers

Scale bars = 10 mm



Maoricicada cassiope

Dunbar, Nelson.
7th-1885 SVM.
Lectotype of
Maoricicada
cassiope Hudson
C.A. Fleming Dec. 1966

Maoricicada
cassiope
(Hudson, 1891)

LECTOTYPE



Maoricicada clamitans

Maoricicada
clamitans
Dugdale & Fleming
1978

C.A. Fleming
Collection

Maoricicada clamitans
Dugdale & Fleming, 1978

HOLOTYPE

Scale bars = 10 mm



Maoricicada hamiltoni

Type

British Museum
Natural History
London, U.K.

J.G. Myers Coll.
B.M. 1967-1968

Melampsalta hamiltoni
Myers HOLOTYPE



Maoricicada iolanthe

LECTOTYPE
Cicada iolanthe Hudson

Mount of
Duffin
1891/1892

Melampsalta
(iolanthe) (Hudson)
Det. E.S. Gourlay
4-11-63

LECTOTYPE
Cicada iolanthe
G.V. Hudson, 1891
Karori, Dec. 1890
selected by C.A.
Fleming, May 1966

Scale bars = 10 mm



Maoricicada lindsayi

Type
 MCS 94
 No. 317
 (part 1)
 J. G. Myers Coll.
 B.C. 267.709.
 107a
Heteroptera *Panorhalla*
lindsayi
 ♂ Myers



Maoricicada mangu celer

New Zealand.
 Turk Ridge
 Crowned Range
 MB. 2000m
 3 Feb. 1971
 J.S. Dugdale +
 J.L. Townsend.
 J.S.D. recorded.
HOLOTYPE
♂ *Maoricicada*
mangu celer
 Dugdale, n.sp.

Scale bars = 10 mm



Maoricicada mangu gourlayi

Dun Mt. Peck,
Nelson Is. N.Z.
c. 3000 ft. Elev
4.2.68 C.A.F.
P. Maury-Deshayes det.

Holotype
Maoricicada mangu
gourlayi sp. n.

Maoricicada
mangu gourlayi
Dugdale & Fleming, 1978

HOLOTYPE



Maoricicada mangu multcostata

DARLBOROUGH
Aitiamoch
Mar 22-72
A. Whittaker.

Maoricicada
mangu multcostata
Dugdale & Fleming, 1978

HOLOTYPE

Scale bars = 10 mm



NEW ZEALAND, WAI
Gulf, 950m W of
Dunedin, Wairarapa
30 Jan. 1967
C.A. Fleming

24/1/67
C.A. Fleming

*Maoricicada
myersi*
(Fleming, 1971)

HOLOTYPE

Figured
specimen

Maoricicada myersi



OTAGO
Old Man Rn.
(nr. Obelisk)
5400' CAP
31.1.70

HOLOTYPE ♂
*Maoricicada
nigra frigida*
Dunedin + Fleming
1971

Maoricicada nigra frigida

Scale bars = 10 mm



Maoricicada oromelaena

Type
Mt. Cloughburn
20.11.12
J.S. Nixon Coll.
L.N. 101-20
Maoricicada oromelaena
New Zealand HOLOTYPE



Maoricicada otagoensis maceweni

SOUTHLAND
Tukitumu Sta.
Cheriton's Face
2500-3200'
CAF/ADMeR
13. 2. 70
Maoricicada otagoensis
maceweni
Dugdale & Fleming, 1978
HOLOTYPE

Scale bars = 10 mm



Coronet Peak
3100'-5400'
13. 3. 1967
C. A. & M. A. Fleming
Maoricicada otagoensis
otagoensis
Dugdale & Fleming, 1978

HOLOTYPE

Maoricicada otagoensis otagoensis



NEW ZEALAND, Otago
Sentinel Peak,
Murch. Step
4800 - 5200 ft.
14 Jan 1971
C.A. Fleming

NEW OTAGO
Sentinel Peak
4800-5200 ft.
14-1-71 C.A.F.

Maoricicada
phaeoptera
Fleming n.sp.

Maoricicada phaeoptera
Dugdale & Fleming, 1978

HOLOTYPE

Maoricicada phaeoptera

Scale bars = 10 mm



Island Pass MB
1100m, grassland
13 Jan 1967, J.S.D.
New A. Holloway.

HOLOTYPE
Maoricicada
tenuis Dugdale
♂

Maoricicada tenuis



Rare Kidnappers
Hawkes Bay
Dec. 1935 A. C. M. H.

Lectotype ♀.
Rhodopsalta
microdora Hudson
C. A. Fleming Dec. 1946.

LECTOTYPE

Rhodopsalta microdora

Scale bars = 10 mm

CIXIIDAE



Aka dunedinensis

NEW ZEALAND DN
Ross Ck. Reservoir
13 Apr 1950
B. L. P. Bennett

HOLOTYPE
Aka
dunedinensis sp. nov.
Larivière, 1999



Aka duniana

Ⓢ Type
Dunedin
2000
7/2/1950
G. H. Mitchell
J. D. Myers Coll.
No. 1007-100
Malpa
duniana
G. Myers



Aka rhodeae

NEW ZEALAND TO
Pureora
Waipapa Res. 570m
26 Jun 1984
J. Hatcher

Malaise trap in
shrublands

HOLOTYPE
Aka
rhodeae
Larivière, 1999



Aka westlandica

NEW ZEALAND TO
Gault /
Thompson Col
Mar 1984
G. Hatcher
ex Kemmler
HOLOTYPE
Aka
westlandica sp. nov.
Larivière, 1999



Cermada inexpectata

NEW ZEALAND TO
Parua
Waipori Riv. 570m
26 Jan 1982
J. Ruckwieser

Male trap in
Paluweys

♂

HOLOTYPE
Cermada
inexpectata
sp. nov.
Lutshorst, 1993



Cermada kermadecensis

Type

Kermadec
1948

J. G. Myers Coll.
B.N. 1002.516

Holotype
Cermada
kermadecensis
♀
Myers



Cermada tiregia

Castaway
Camp

Three Kings Is
Great I., Nov., 79
50, Nov., 81, 82p.

G. Koochei

♀

HOLOTYPE
Cermada
tiregia
sp. nov.
Lutshorst, 1993



Chathamaka andrei

NEW ZEALAND, CI
Pt. L. Gray Bay Res
28 Jul 1982
P. Byrd
Material from *Discoplytus*

HOLOTYPE
Chathamaka
andrei
Lutshorst, 1993



Huttia nigrifrons

Type

Upper Coll
5-12-30

1164

J. G. Myers Coll
A.M. 1937-1940

Huttia
nigrifrons
♀
Myers

NEW ZEALAND NB
Otago SF
15 Jul 1976
J.S. Dugdale

Sleeping
at night

HOLOTYPE
MUSE
1075 Lanvère sp. nov.
Del. Larivière 1999

face
D.W. Delcourt
28.5.96



Huttia northlandica



Koroana arthuria

Type

South Isl
12-11-97
J.G. Myers
21.7.97

Lower Isl
28.11.97

J. G. Myers Coll
E.M. 1987-1988

Koroana
arthuria
♂
Myers

NEW ZEALAND GL
Duff Pt. 840m
15 Feb 1988
J.C. Matt
beaten at night

HOLOTYPE
Koroana
lanceloti sp. nov.
Larivière, 1997



Koroana lanceloti



Malpha cockcrofti

TYPE
 1974
 J.G. Myers Coll.
 E.N. 1002 104

Malpha
cockcrofti
 ♀ Myers



Malpha muiri

TYPE

1974
 J.G. Myers Coll.
 E.N. 1002 104

Malpha
muiri
 ♀ Myers



Parasemo hutchisoni

NEW ZEALAND TO
 Parasemo
 Waipapa Riv., 570m
 24 Nov 1983
 I. Hutchison

♀
 HOLOTYPE
 Parasemo
 hutchisoni sp. nov.
 Latham, 1984



Semo harrisi

TYPE

1974
 J.G. Myers Coll.
 E.N. 1002 104

Huttia
harrisi
 ♀ Myers

*Semo southlandiae**Semo transinsularis*

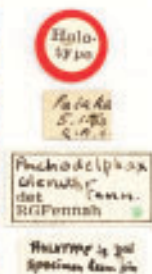
DELPHACIDAE



Anchodelphax hagnon



Anchodelphax olenus



Eorissa cicatrifrons



Nilaparvata myersi





Notogryps ithoma

Holo-
type
Mangrove
8. 2. 38
A.A.C.
Notogryps
ithoma 2
det. Fenn.
R.G.Fennah



Notogryps melanthus

Holo-
type
Mangrove
21. 1. 38
16
6
Notogryps
melanthus
det. Fenn.
R.G.Fennah
Material 2 per
specimen, from etc.
[Yellow circular stamp]



Notohyus erosus

Holo-
type
Tumbledown Bay, Beaks
Rn. N.E. 19 Feb 1979
T.E. Woodward
On bushes
Notohyus
erosus 2
det. Fenn.
R.G.Fennah



Sulix insecutor

Holo-
type
Mangrove (20/1/38)
det. Fenn.
R.G.Fennah
4. (1)
33
1
Sulix
insecutor
det. Fennah
R.G.Fennah
[Yellow circular stamp]



Sulix tasmani



Sulix vetrario



Ugyops pelorus



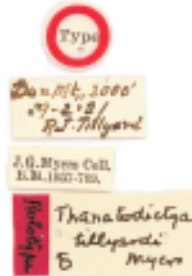
Ugyops rhadamanthus



DICTYOPHARIDAE



Thanatodictya tillyardi



MYERSLOPIIDAE



Myerslopia magna amplificata

Holo-
type

Bellevue Creek
Parakaki -
Bellevue 1965/66
J. J. Tweed

Myerslopia magna
amplificata sp. nov.
det. M. J. S. 2002
N. Z. Fauna 1972



Myerslopia magna magna

Type

G. V. H.
T.E.
Waimarino
Jan. 1922

J. O. Myers Coll.
S. N. 1937-1939

Myerslopia magna magna sp. nov.
J. W. Evans 24. 04. 6



Myerslopia magna scabrata

Holo-
type

Waimat Pass
5000-6500

Manapouri
Exp. Jan 70
G. N. S. R. Gray

Polynesian
Forest Dept.

Myerslopia magna
scabrata sp. nov.
det. M. J. S. 2002
N. Z. Fauna 1972



Myerslopia rakiuraensis

NEW ZEALAND Insect
Specimens from
Coll. No. 8.2.1892
1952/53 deposited
in D. Burckhardt's Coll.

Myerslopia

det. D. Burckhardt
1974

HOLOTYPE

Myerslopia
rakiuraensis sp. n.
det. J. Specks 2002



Myerslopiya tawhai

NEW ZEALAND Is. S.
 Longwood Forest, 200m
 NW 1990, elev. 1
 March 1990
 D. Burckhardt & G.
 Myerslopiya
 +
 det. D. Burckhardt
 1994

HOLOTYPE

Myerslopiya
 tawhai Sord. ♀ +
 det. J. Sorensen 2002



Myerslopiya tearohai

NEW ZEALAND Is. S.
 Mt. Te Aroha, 800m
 21/1/1992
 elev. forest forest
 D. Burckhardt & G.
 Myerslopiya
 +
 det. D. Burckhardt
 1994

HOLOTYPE

Myerslopiya
 tearohai Sord. ♀ +
 det. J. Sorensen 2002



Myerslopiya tiregia

**Holo-
 type**

Three Kings Is.
 Great L. 200m, 770
 Mt. St. S. S. S. S.
 Taranaki
 Valley

J. C. Watt

Litter

Myerslopiya
 tiregia n. sp.
 det. Burckhardt
 1994



Myerslopiya whakatipuensis

NEW ZEALAND Is. S.
 Whakatipu Mts, 100m
 elev. forest forest
 12/1/1990
 D. Burckhardt & G.
 Myerslopiya
 +
 det. D. Burckhardt
 1994

HOLOTYPE

Myerslopiya
 whakatipuensis Sord. ♀
 det. J. Sorensen 2002



Pemmation asperum asperum

Holo-
type

Orabi Forks
500' 609-65
J.L. Townsend
Litter

Myxotopia
aspera n. sp.
det. HOLOTYPE
W.J. Knight 1972



Pemmation asperum cognatum

Holo-
type

McLennans
Bush 27.2.66
W. A. Walker

Myxotopia
aspera
cognata n. subsp.
det. HOLOTYPE
W.J. Knight 1972



Pemmation bifurca

Holo-
type

Wahitakea Forest
Dec 19.4.62 (Holt)
W. A. Walker

Myxotopia
bifurca n. sp.
HOLOTYPE
W.J. Knight 1972



Pemmation insulare

Holo-
type

Palmer Bush
Ewen Valley
Waikato West
N.Z.

20 Oct 71
G. K. Romney

litter

Myxotopia
insularis n. sp.
det. HOLOTYPE
W.J. Knight 1972



Pemmaton montis

Holo-
type

at Toronto 55W
Mar 1964 -
13 Mar 70

J. L. Tomson

Litter

Myndus
montis n. sp.
det. **HOUSTON**
N.J. Cooper 1972



Pemmaton parvum

Type

Oakton
143
15 June

J. G. Myers Coll.
B. N. 1567-706

Myndus
parvum n. sp.
J. W. Brown det. 1966



Pemmaton simile

Holo-
type

M. H. Herring
650 Weidell
4.11.63

J. L. Tomson
& A. C. Eyles

Forest
Litter

Myndus
similis n. sp.
det. **HOUSTON**
N.J. Cooper 1972



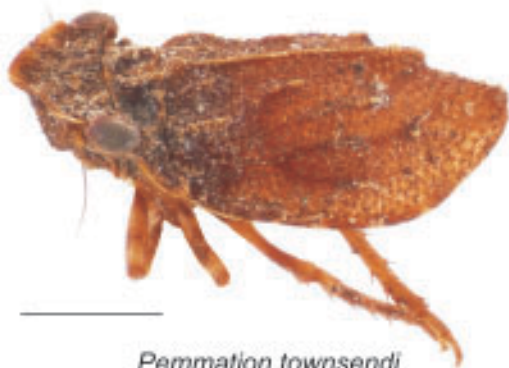
Pemmaton terrestre

Holo-
type

Otago
F.S. 15569
Wellington
J. C. Watt

litter

Myndus
terrestre n. sp.
det. **HOUSTON**
N.J. Cooper 1972



Pemmation townsendi

Holo-
type

Lake Waikare
Waikare
Dec. 1966

Litter
E.D. Walker

*Myeslopia
townsendi* n.sp.
HOLOTYPE
E.D. Walker 1972



Pemmation variabile austrinum

Holo-
type

Kaitiaki Forest
Waikare 700'
20/1/66
J.L. Macdonald

Litter

*Myeslopia
variabile*
austrinum n.sp.
HOLOTYPE
E.D. Walker 1972



Pemmation variabile variabile

Holo-
type

Fabals Hill
Beech Forest
18.4.03
G. Kuschel

Forest
Litter

*Myeslopia
variabile* n.sp.
HOLOTYPE
E.D. Walker 1972



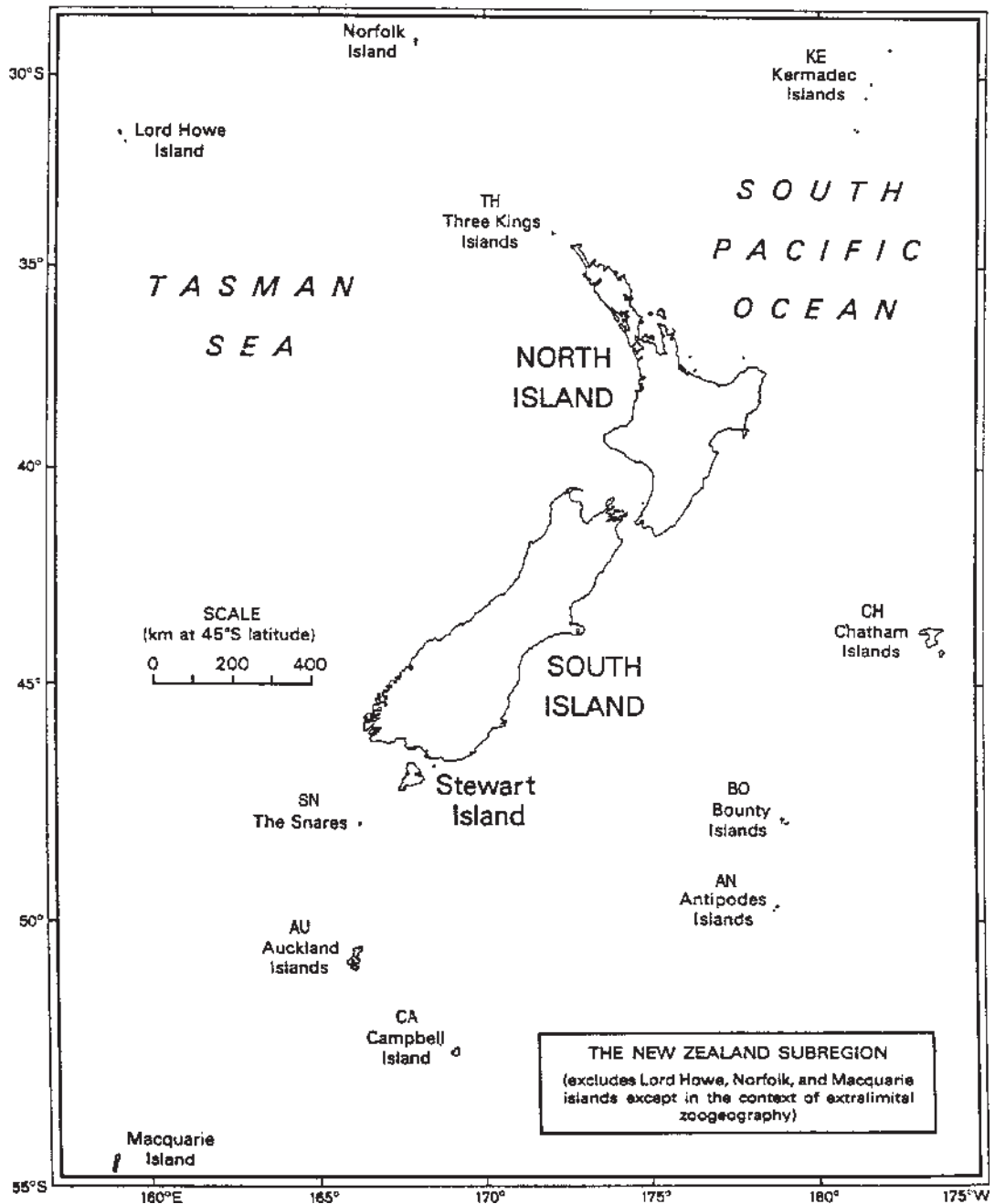
Pemmation verrucosum

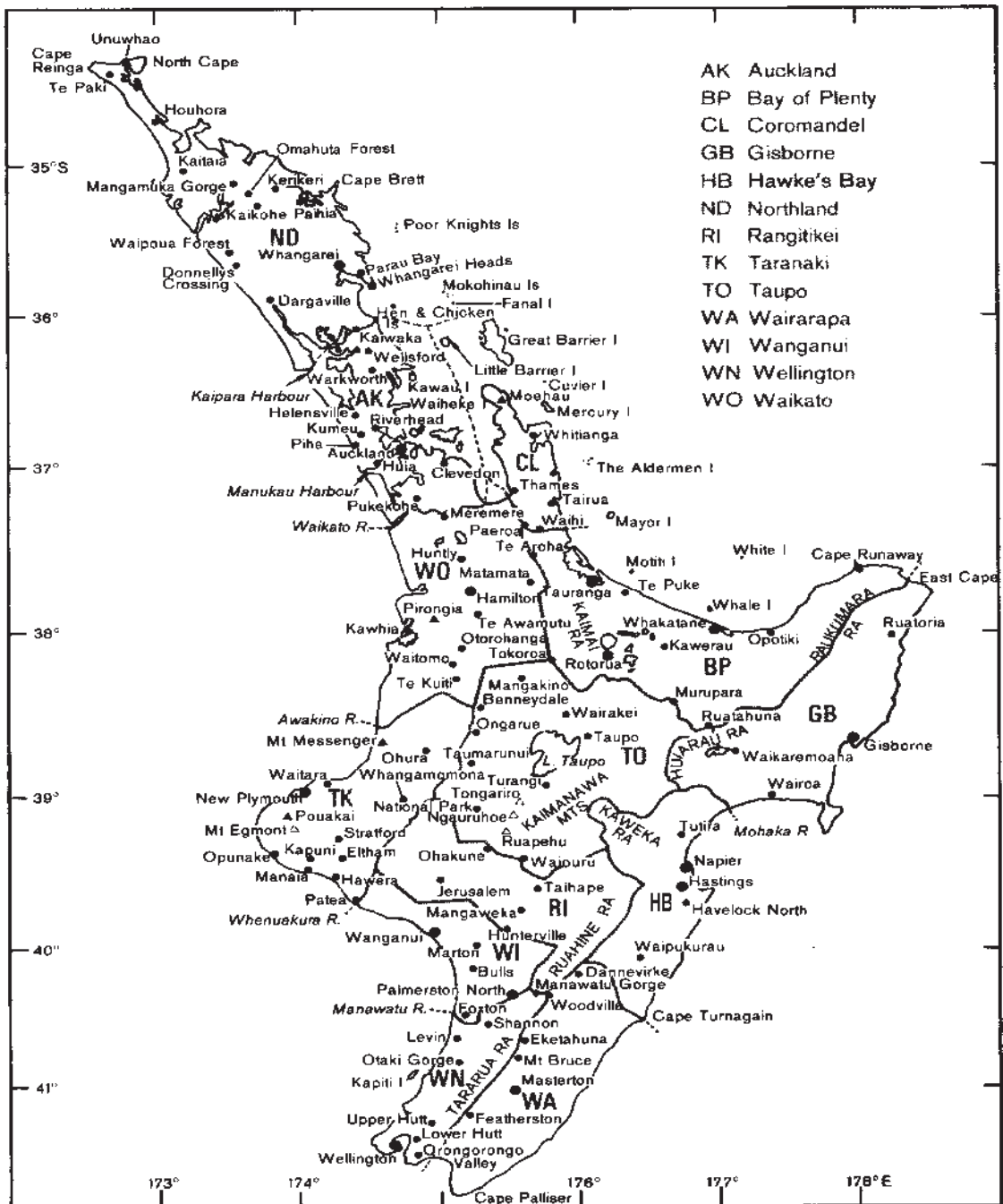
Holo-
type

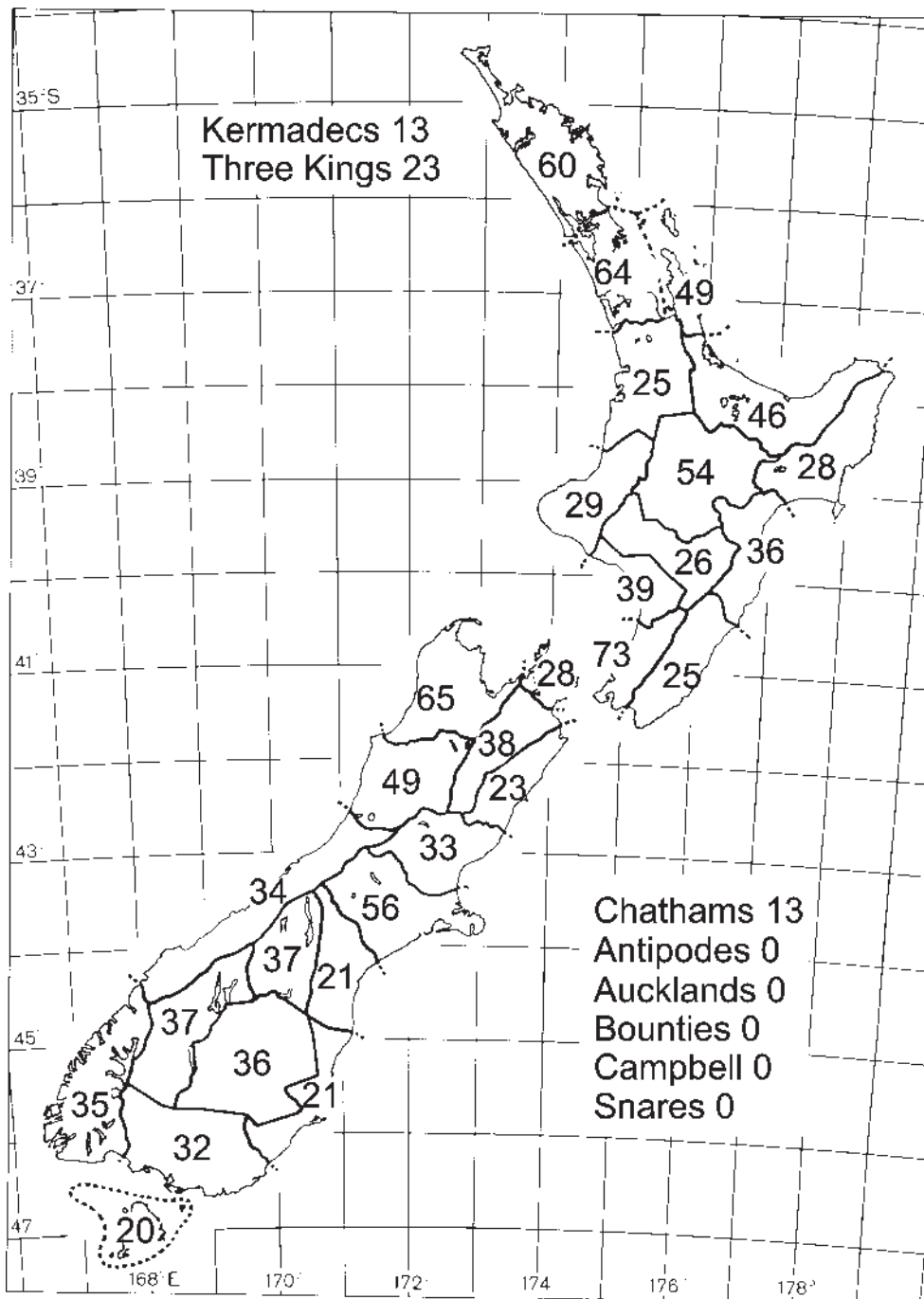
Brace Park
Hunterville
2-12-65
L.P. Mouchant

Forest
Litter

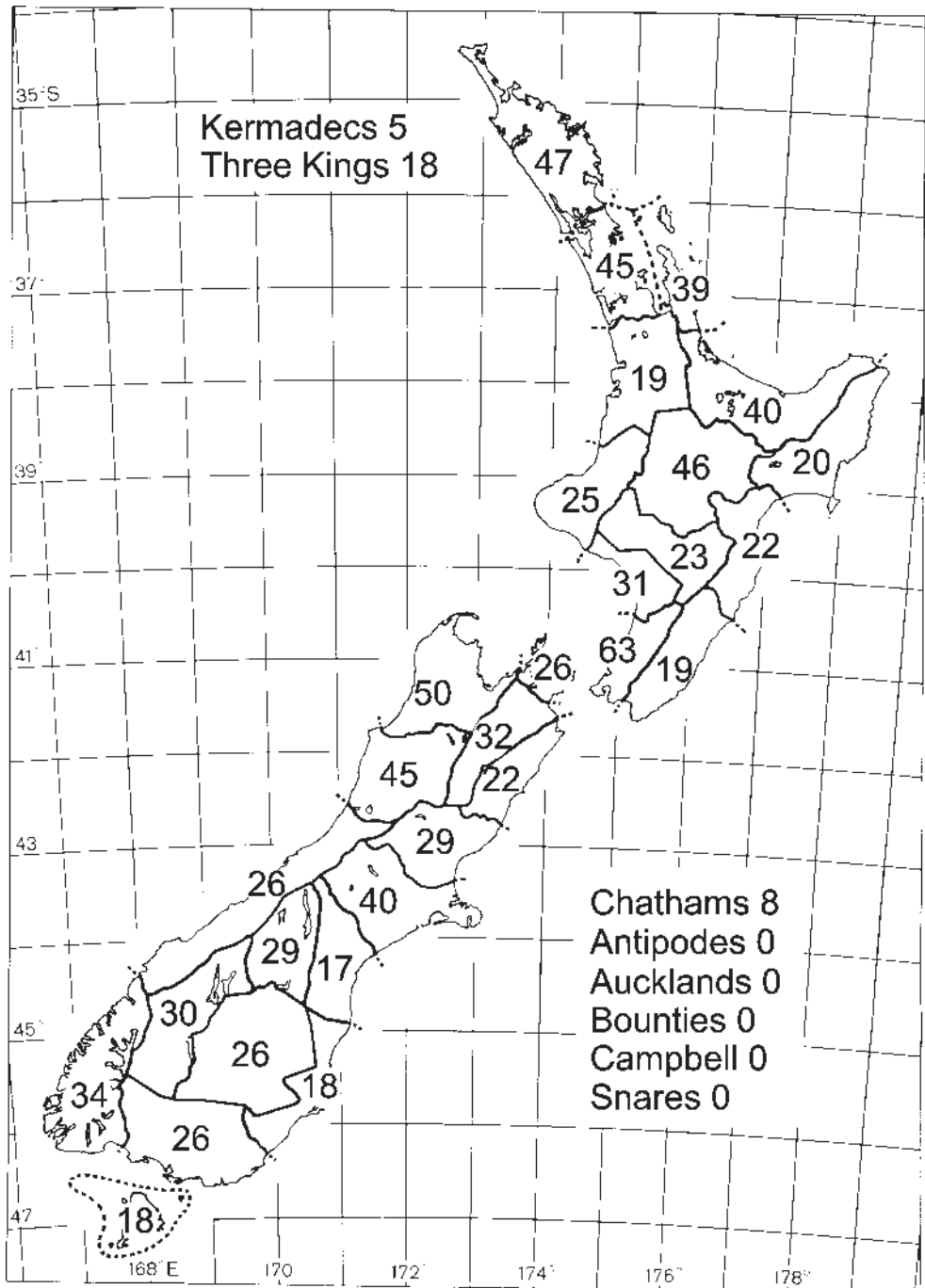
*Myeslopia
verrucosa* n.sp.
HOLOTYPE
E.D. Walker 1972



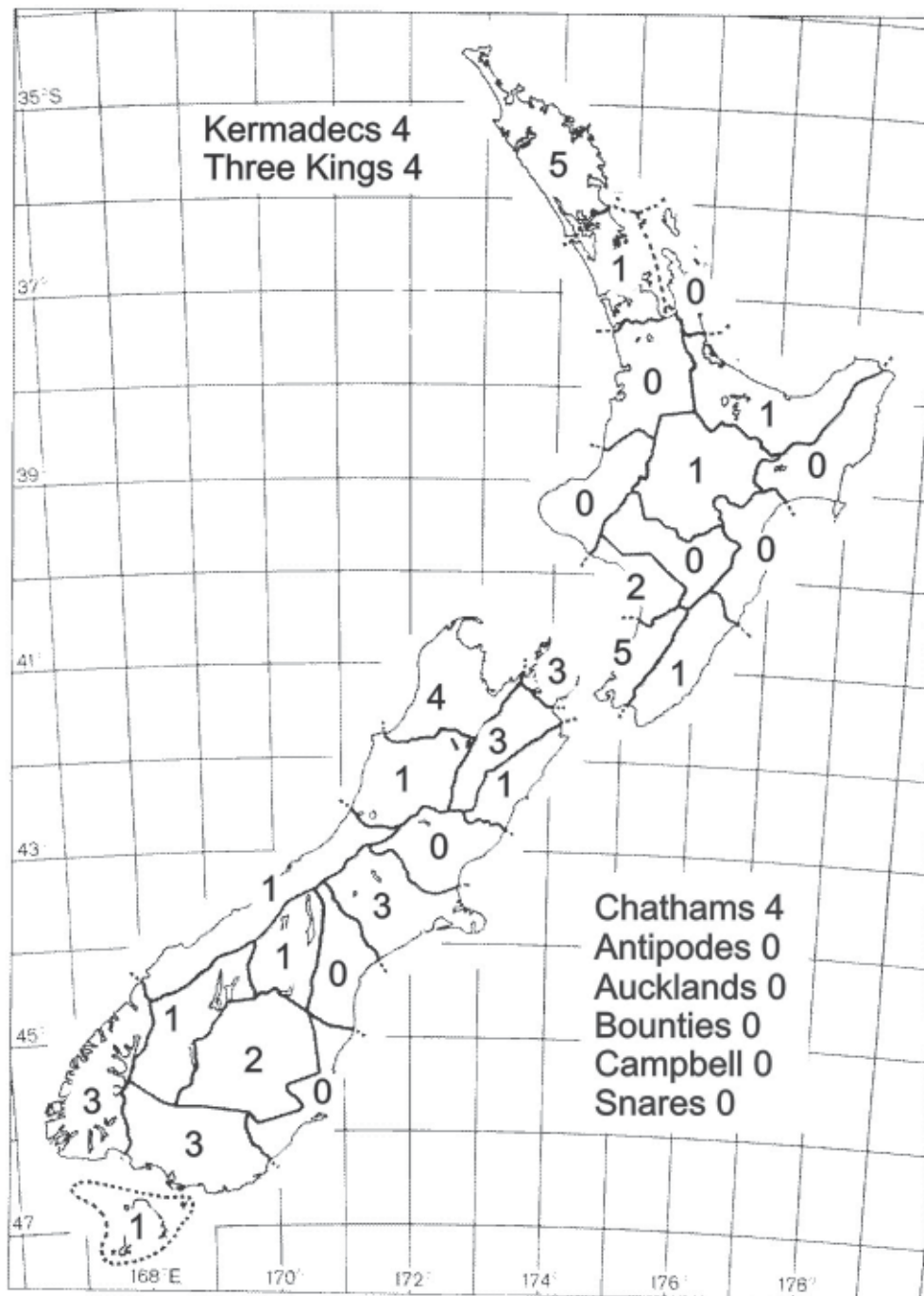




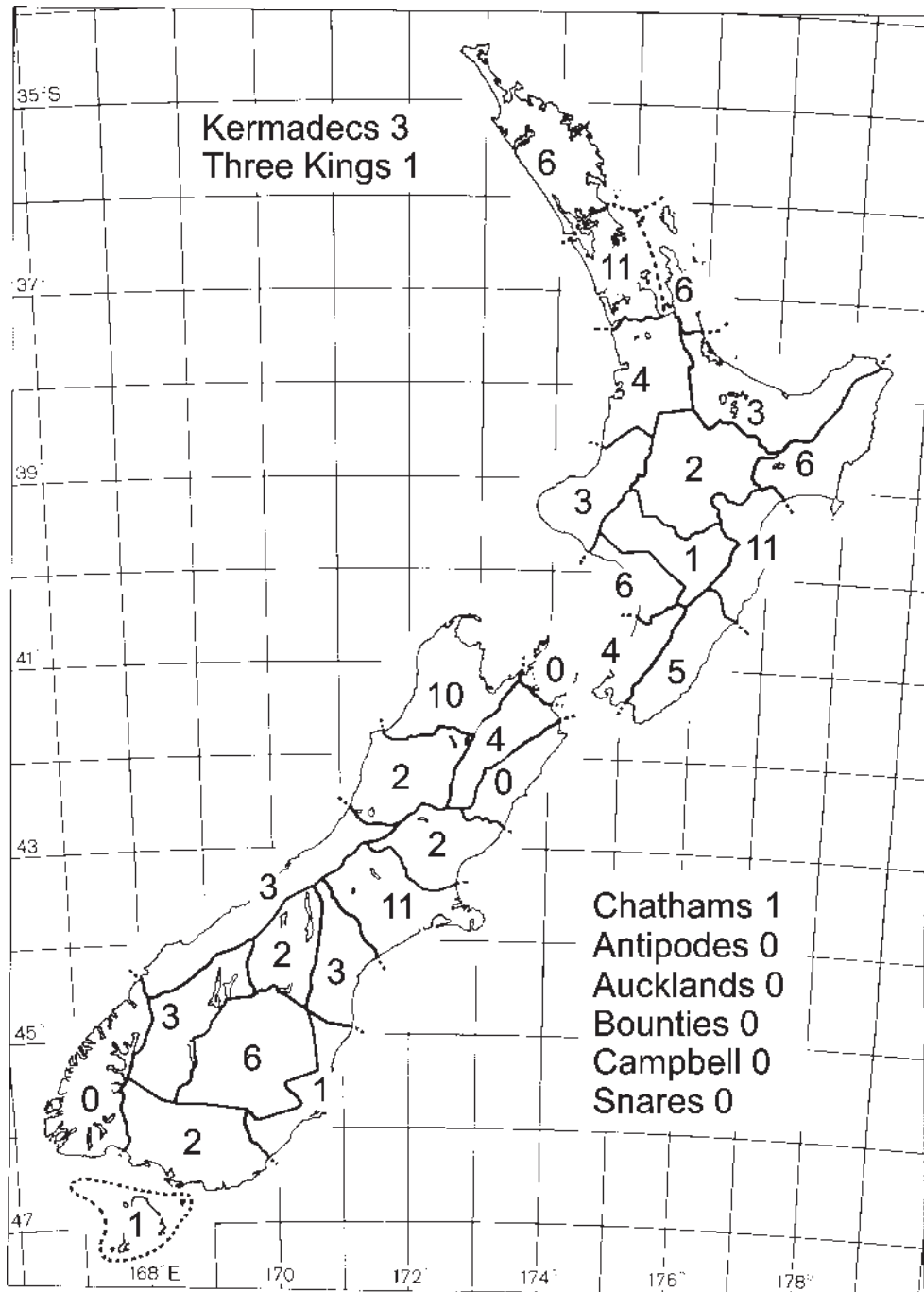
Map 4. Total number of species-group taxa by areas.



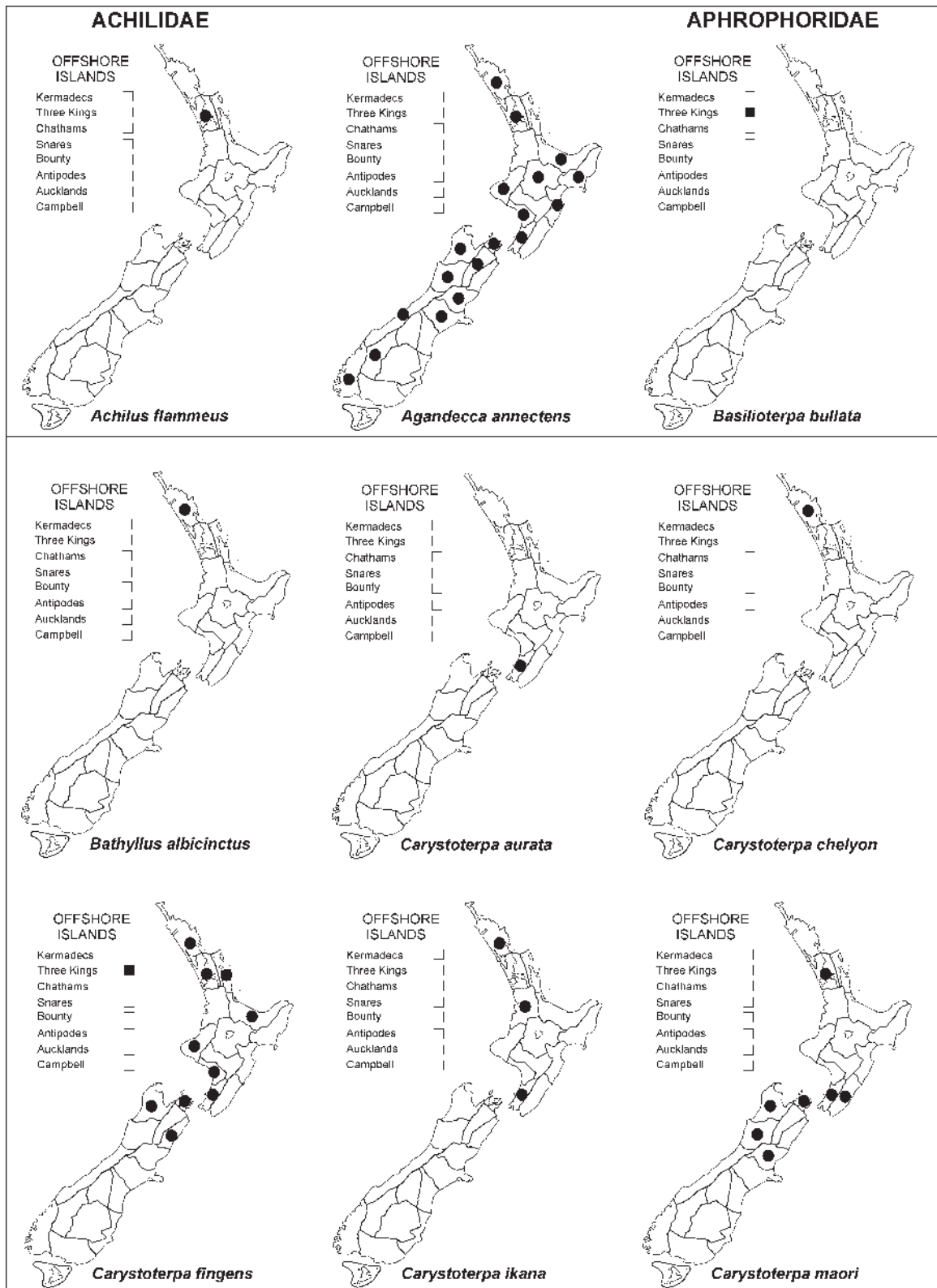
Map 5. Number of known New Zealand endemic species-group taxa by areas.



Map 6. Number of New Zealand endemic species-group taxa known to be restricted to single areas.

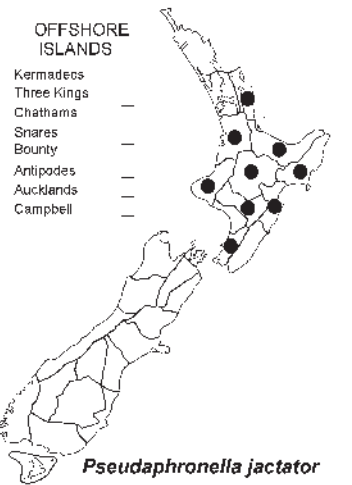
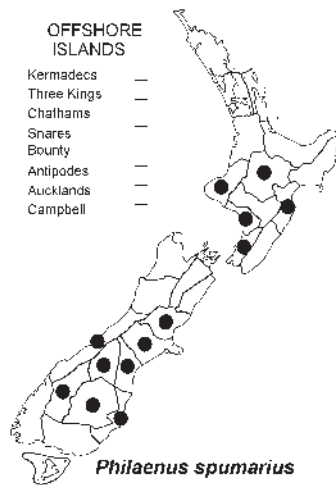
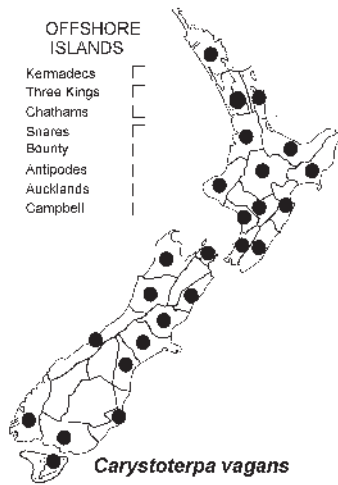
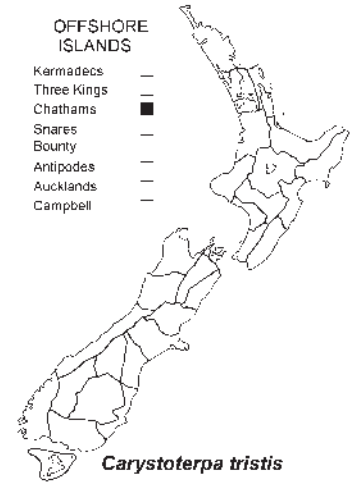
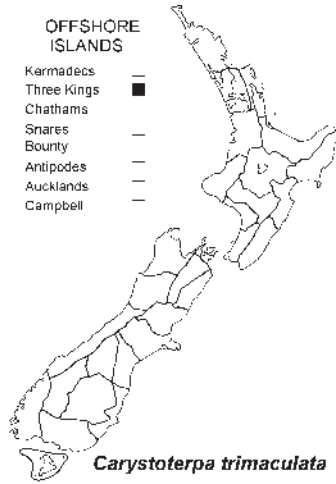
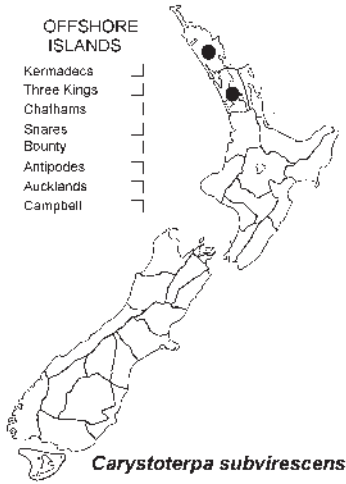
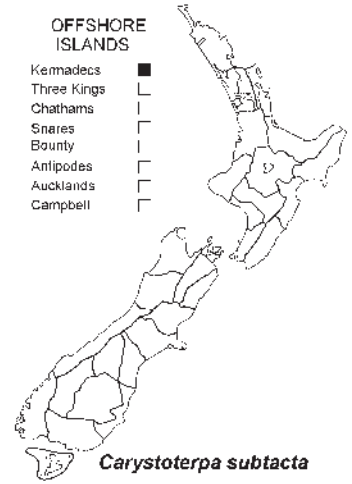
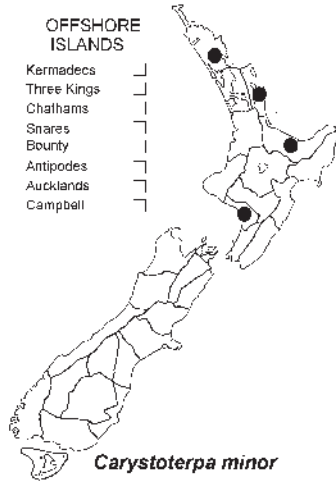
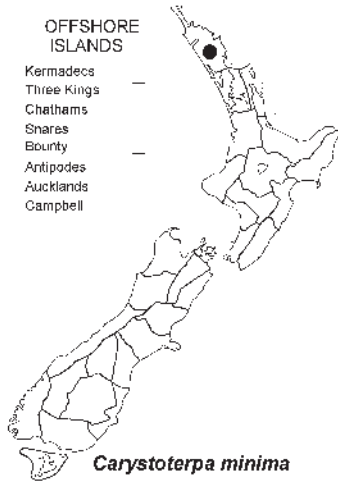


Map 7. Number of known adventive species-group taxa by areas.

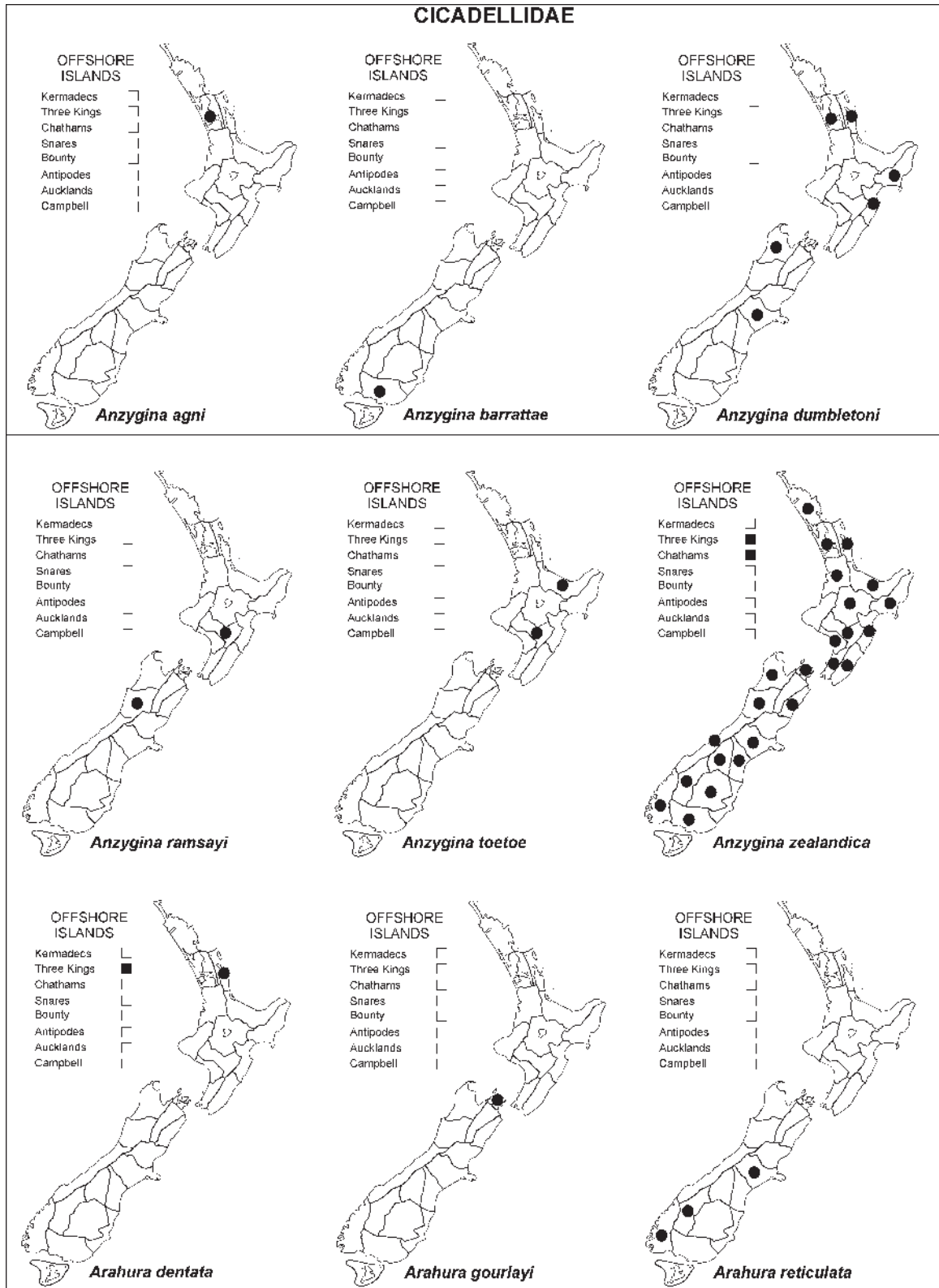


Species distribution maps (pp. 199–221). Presented alphabetically by families, genera and species. Area boundaries follow area codes of Crosby *et al.* (1976, 1998).

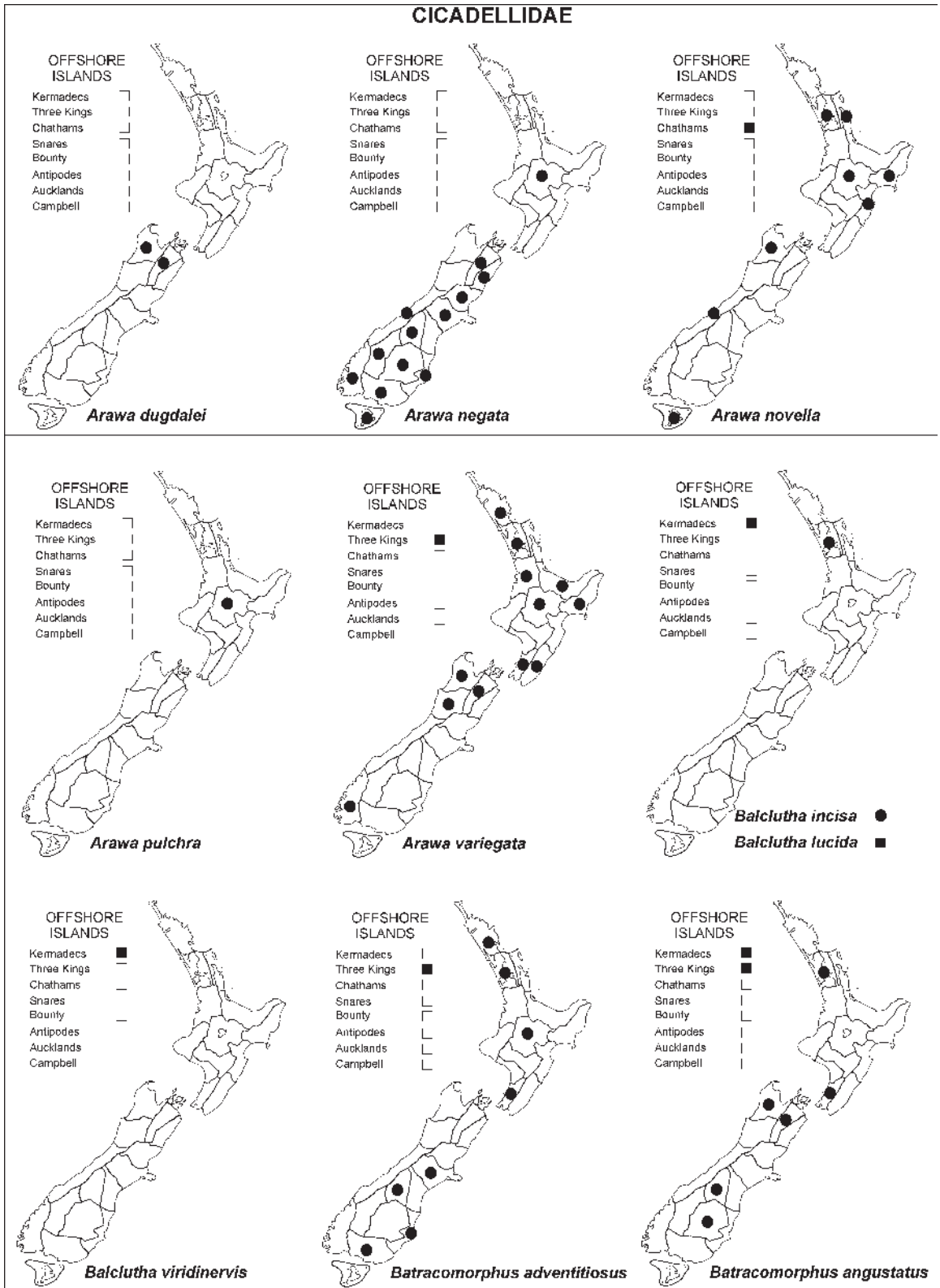
APHROPHORIDAE



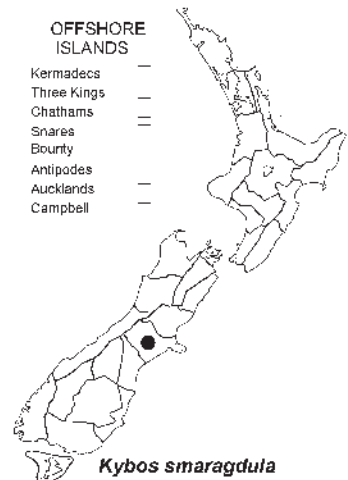
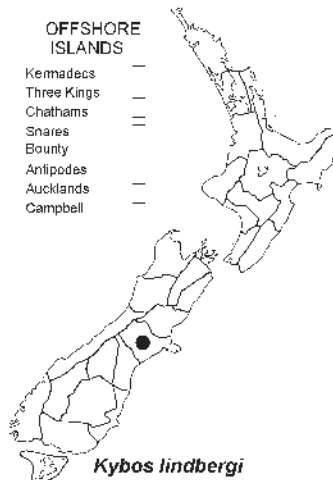
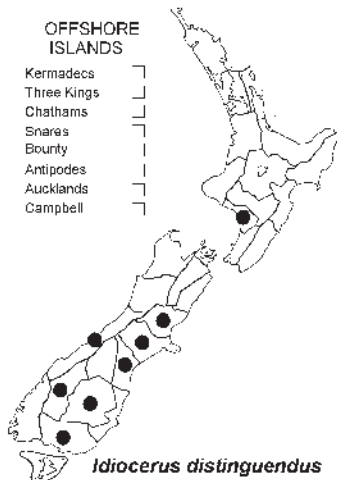
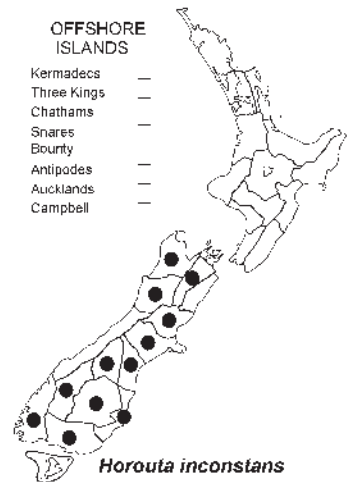
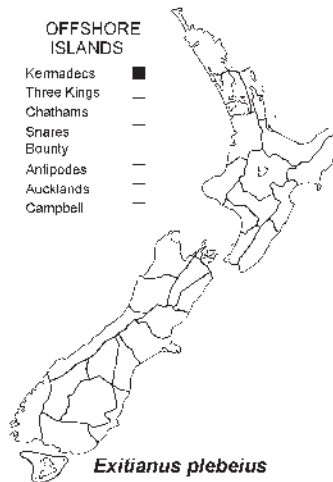
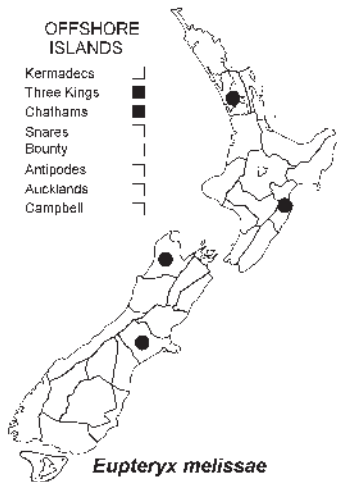
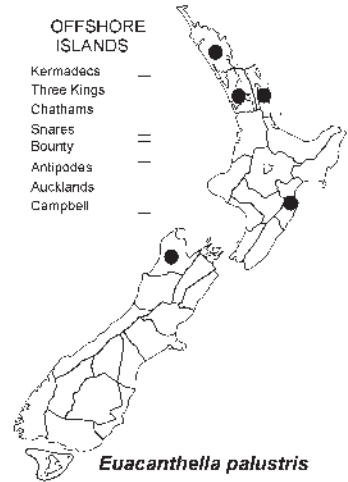
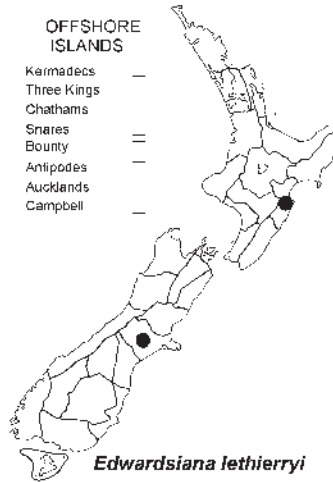
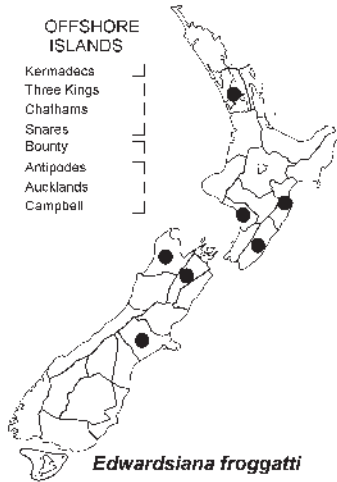
CICADELLIDAE



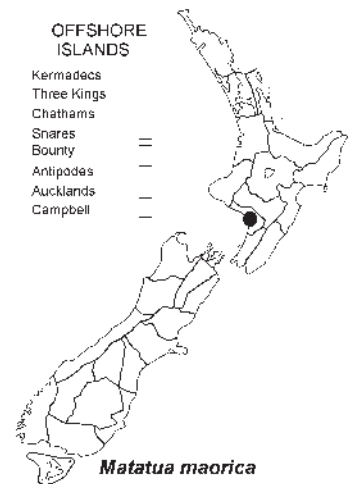
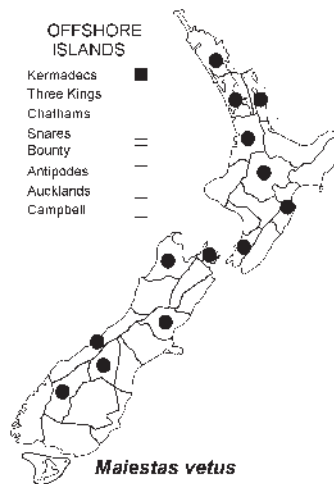
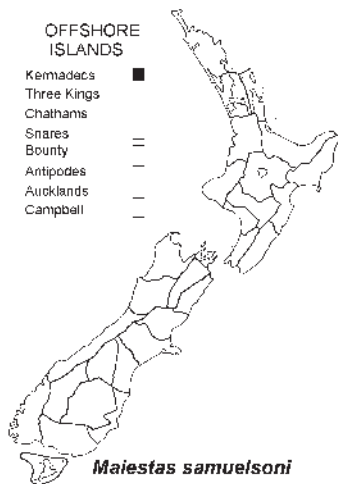
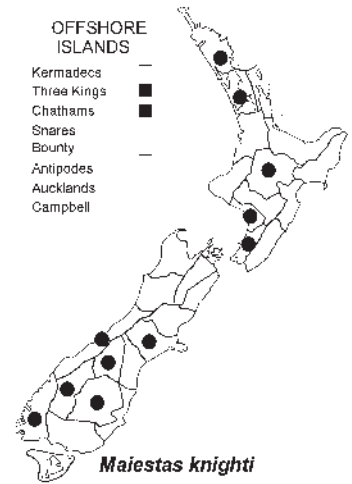
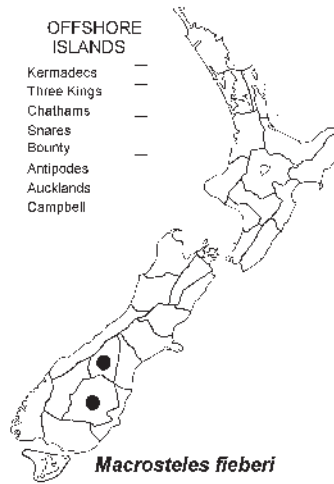
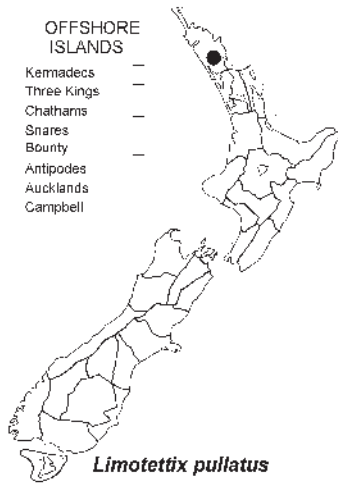
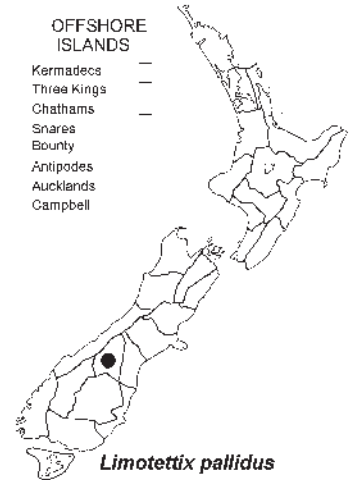
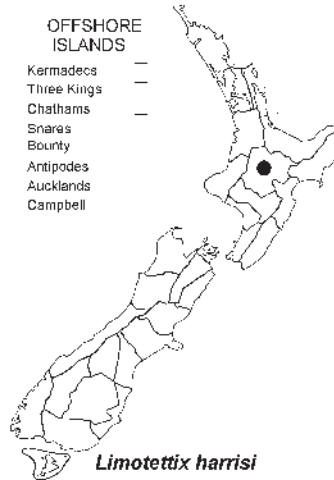
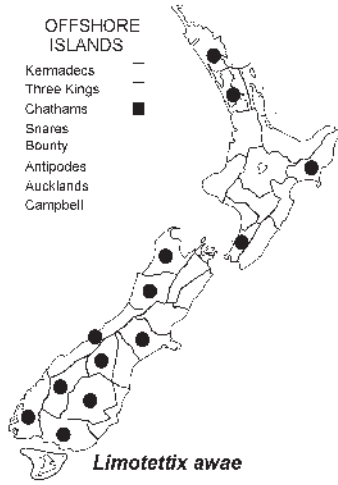
CICADELLIDAE



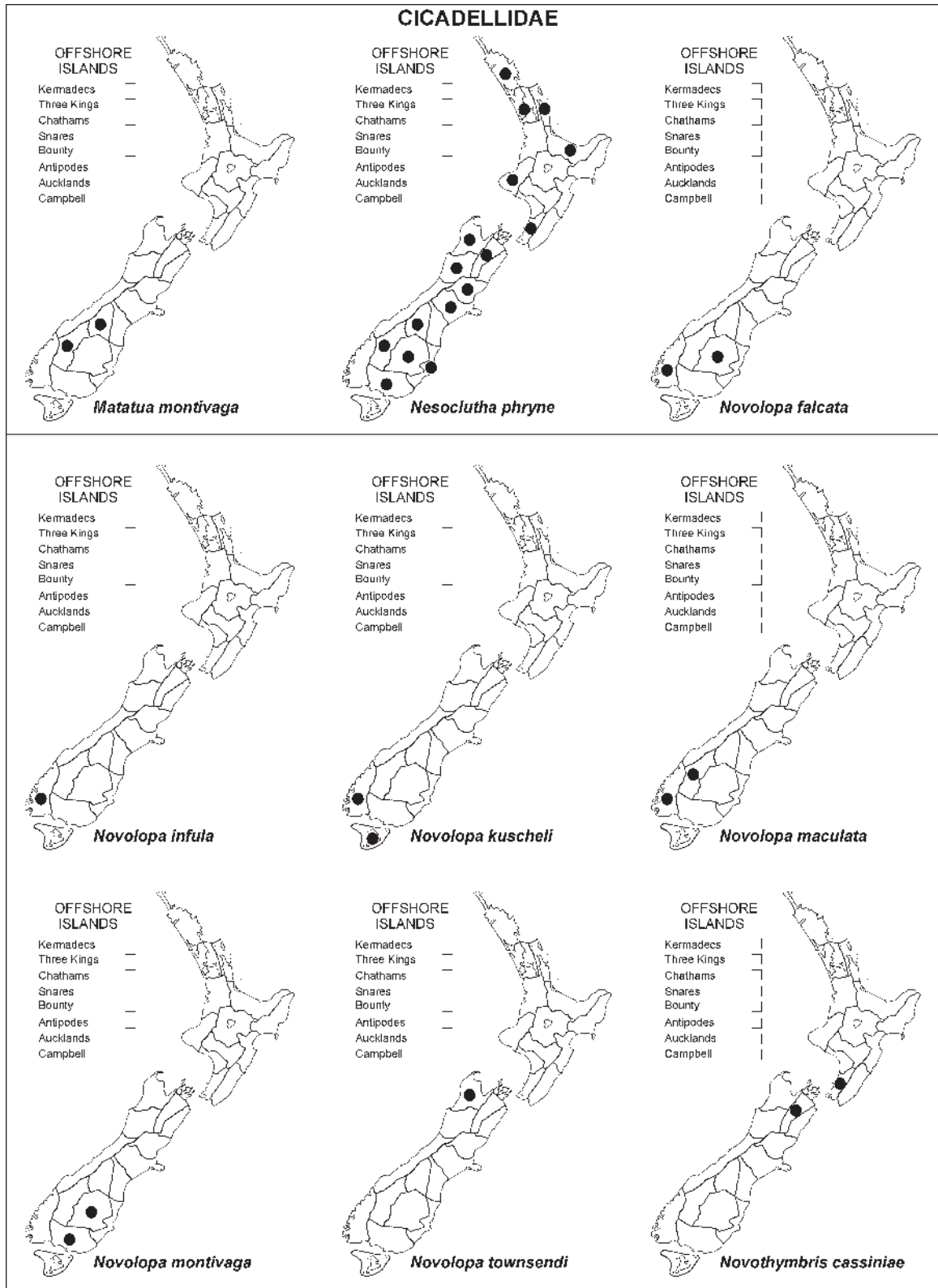
CICADELLIDAE



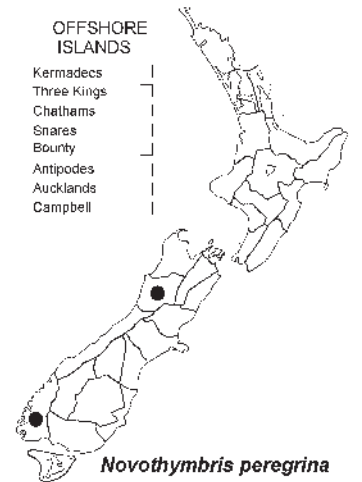
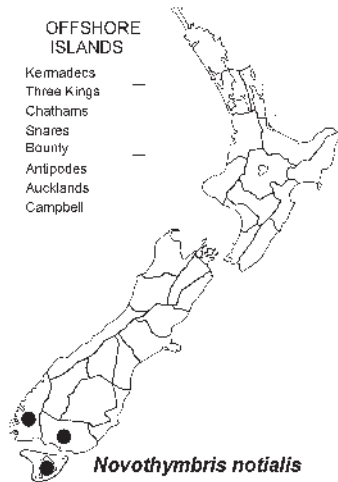
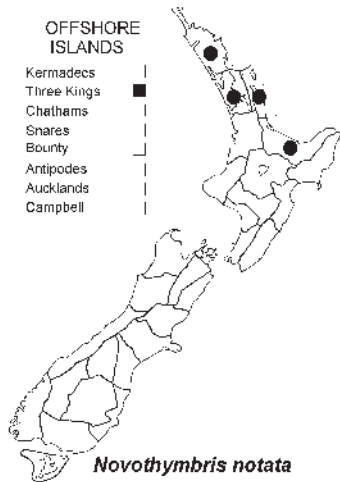
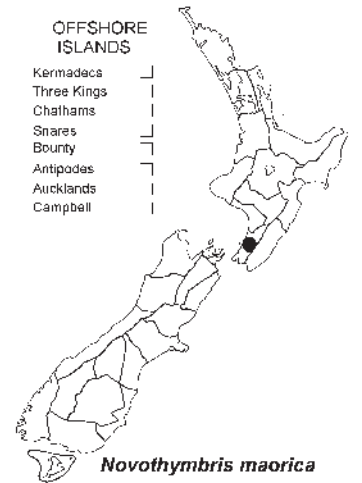
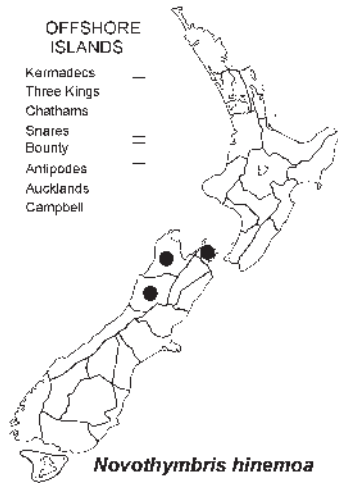
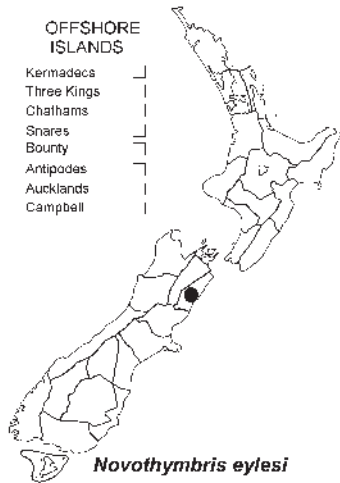
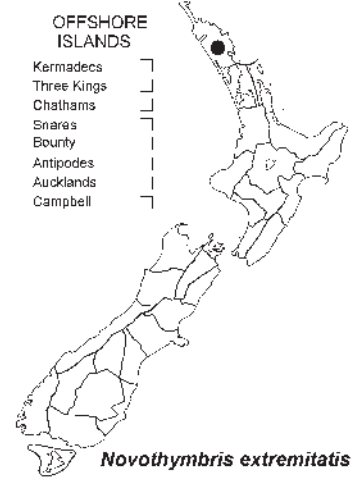
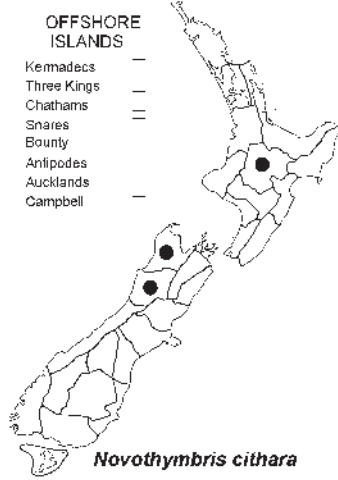
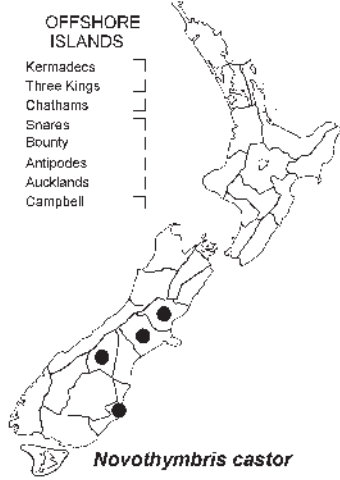
CICADELLIDAE



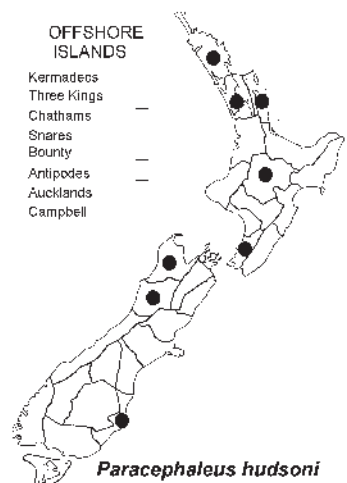
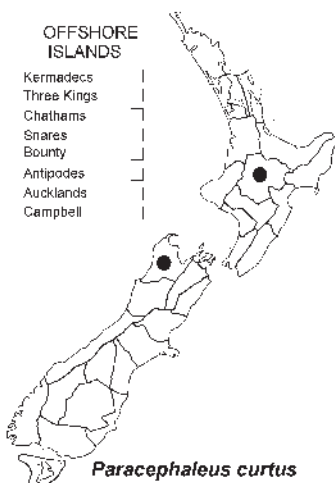
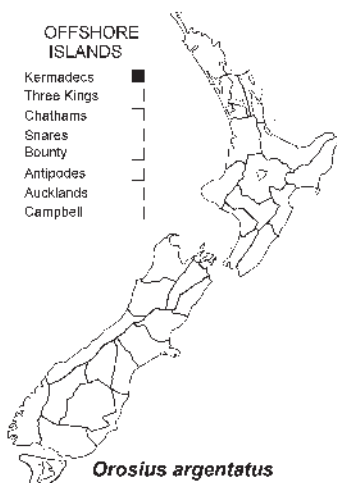
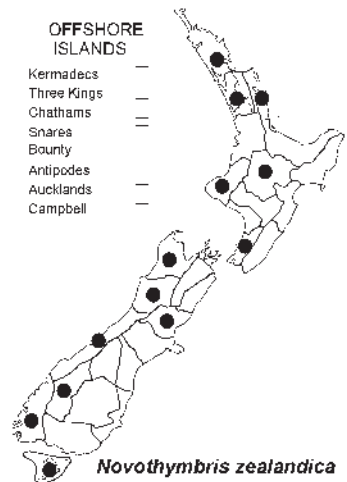
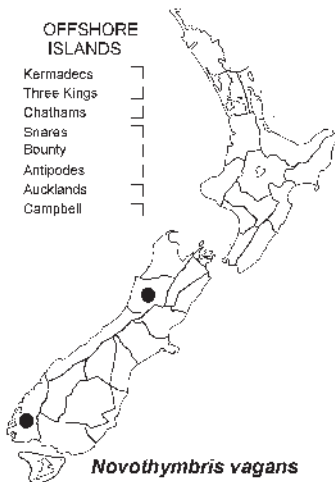
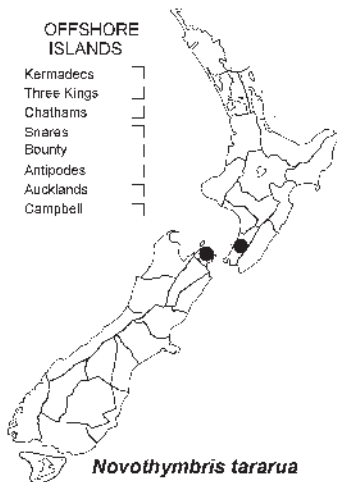
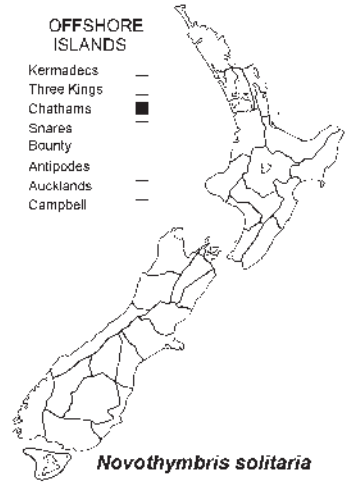
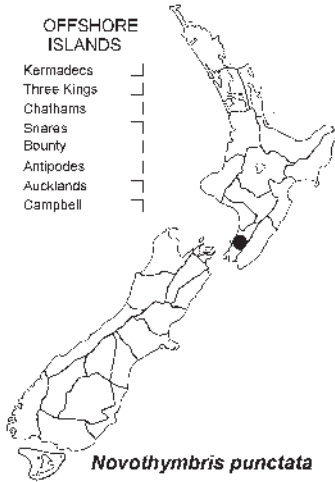
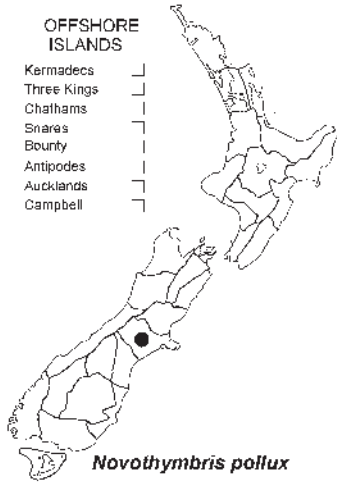
CICADELLIDAE



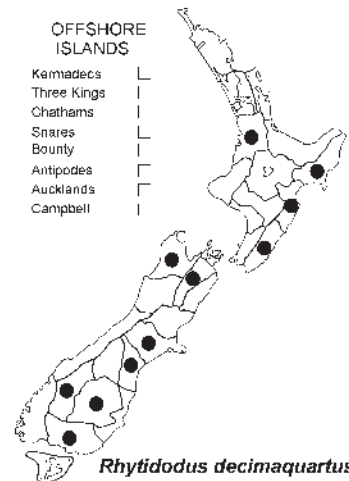
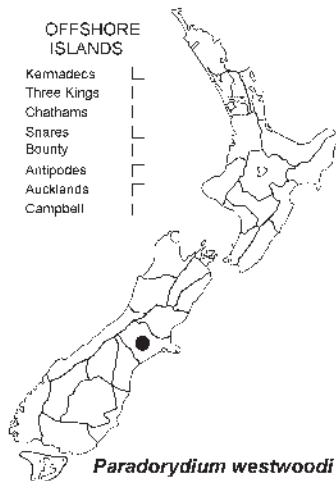
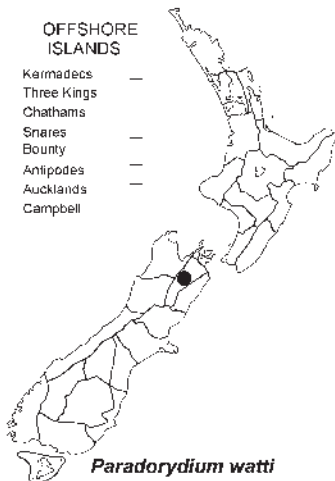
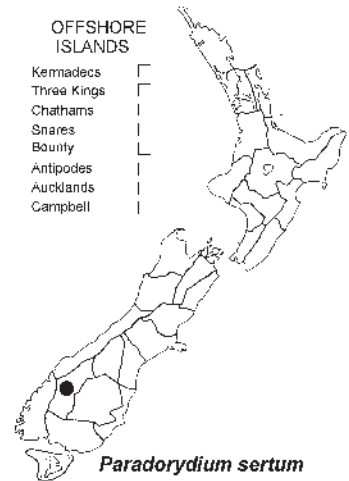
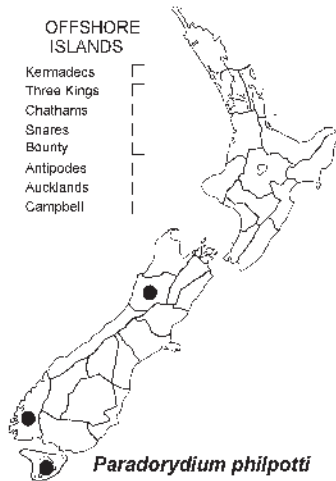
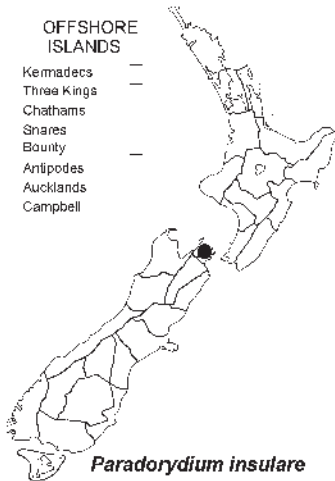
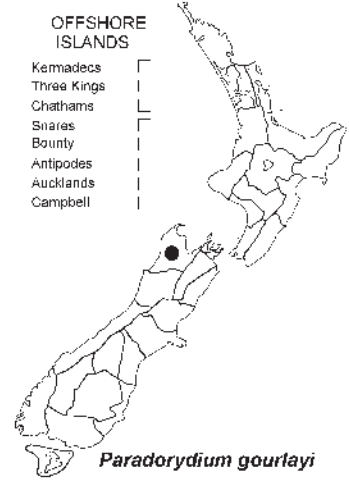
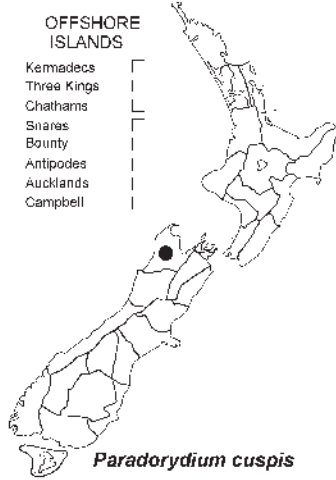
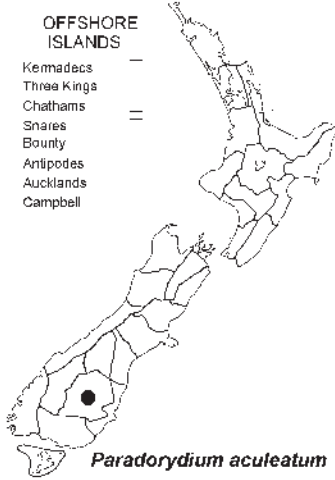
CICADELLIDAE



CICADELLIDAE



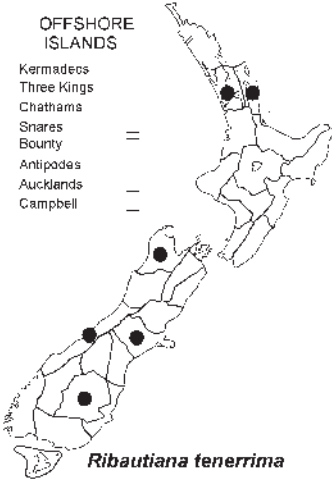
CICADELLIDAE



CICADELLIDAE

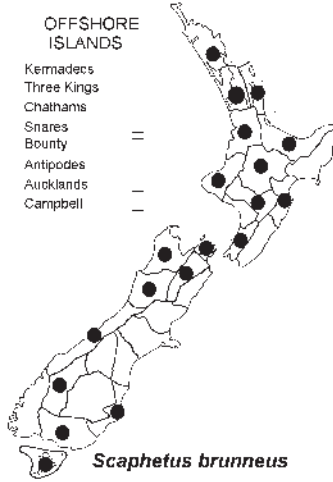
OFFSHORE ISLANDS

- Kermadecs
- Three Kings
- Chathams
- Snare
- Bounty
- Antipodes
- Auckland
- Campbell



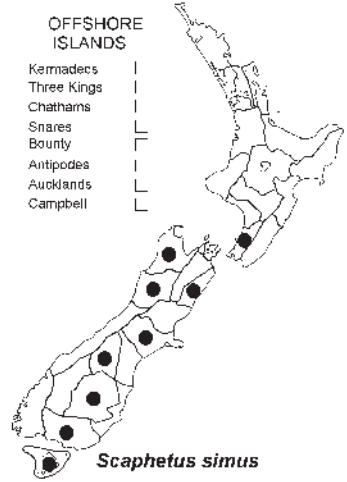
OFFSHORE ISLANDS

- Kermadecs
- Three Kings
- Chathams
- Snare
- Bounty
- Antipodes
- Auckland
- Campbell



OFFSHORE ISLANDS

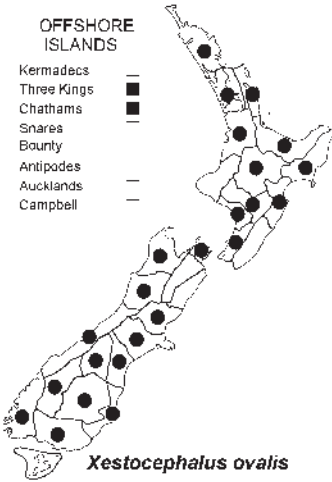
- Kermadecs
- Three Kings
- Chathams
- Snare
- Bounty
- Antipodes
- Auckland
- Campbell



CICADIDAE

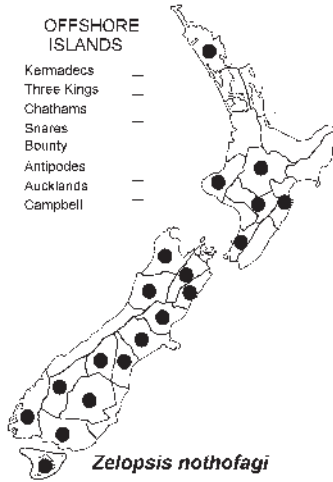
OFFSHORE ISLANDS

- Kermadecs
- Three Kings
- Chathams
- Snare
- Bounty
- Antipodes
- Auckland
- Campbell



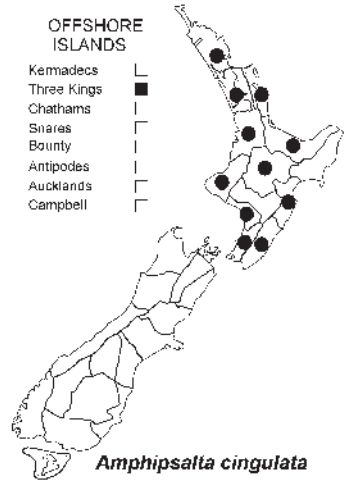
OFFSHORE ISLANDS

- Kermadecs
- Three Kings
- Chathams
- Snare
- Bounty
- Antipodes
- Auckland
- Campbell



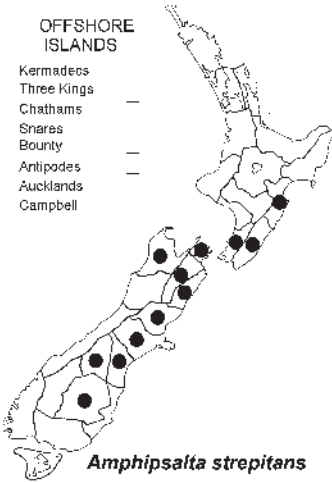
OFFSHORE ISLANDS

- Kermadecs
- Three Kings
- Chathams
- Snare
- Bounty
- Antipodes
- Auckland
- Campbell



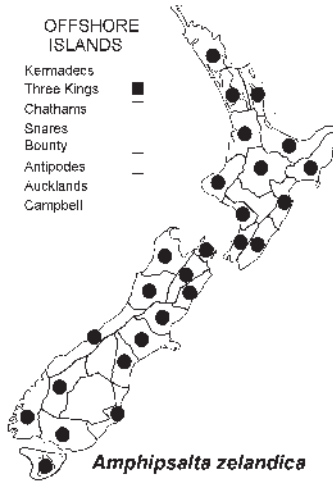
OFFSHORE ISLANDS

- Kermadecs
- Three Kings
- Chathams
- Snare
- Bounty
- Antipodes
- Auckland
- Campbell



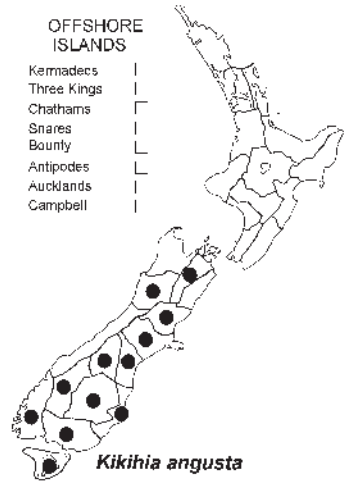
OFFSHORE ISLANDS

- Kermadecs
- Three Kings
- Chathams
- Snare
- Bounty
- Antipodes
- Auckland
- Campbell

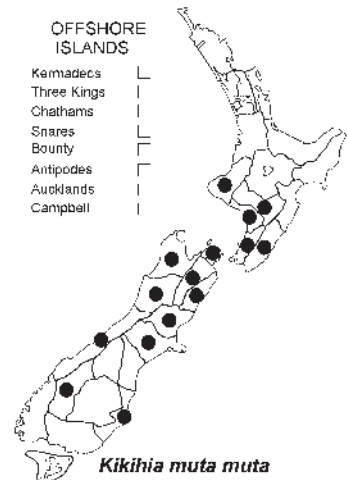
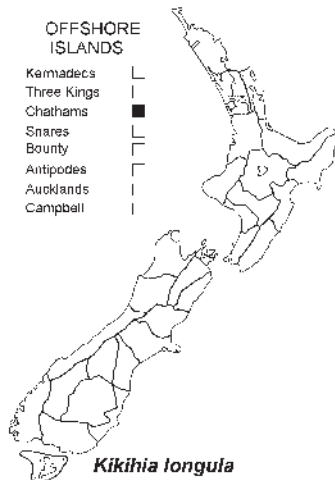
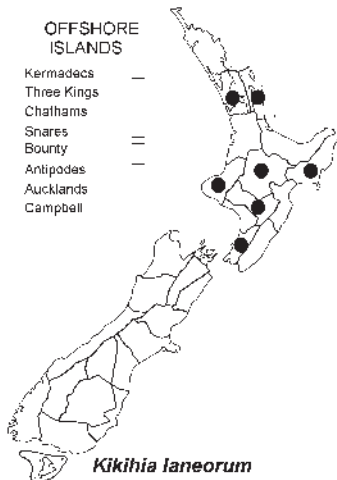
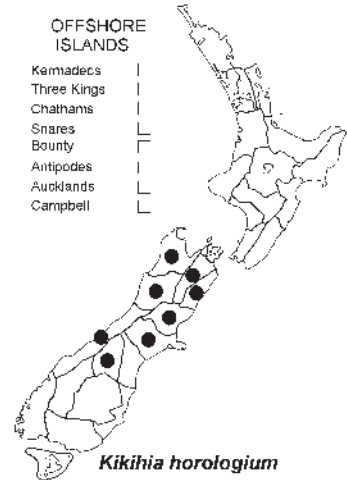
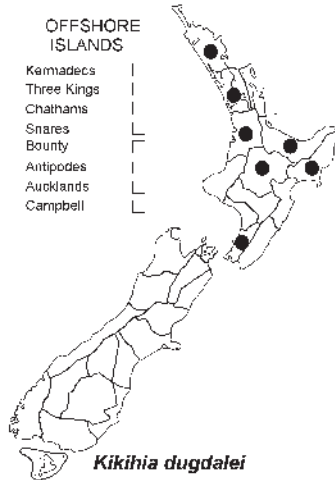
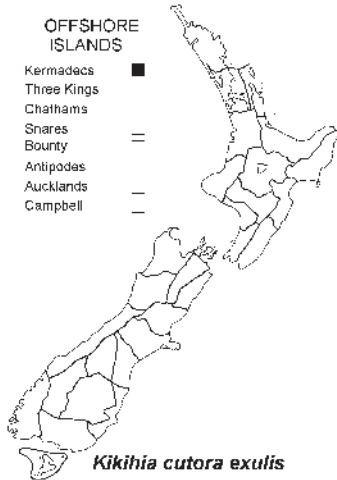
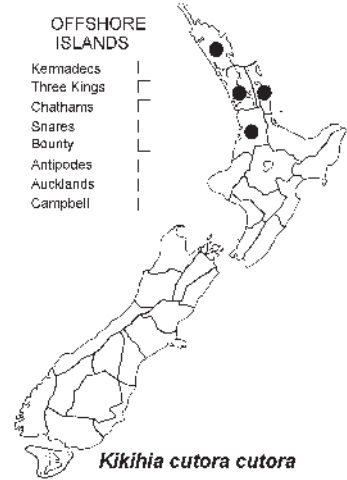
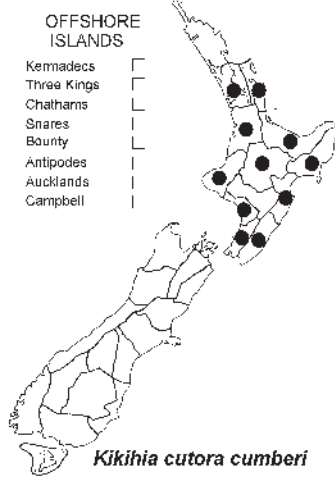
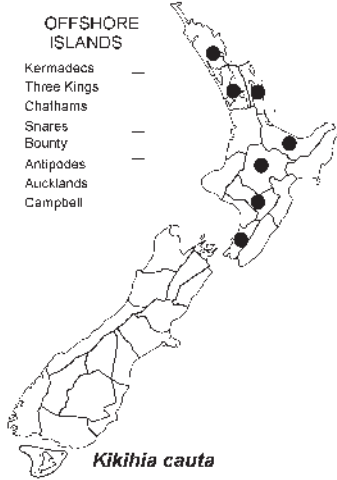


OFFSHORE ISLANDS

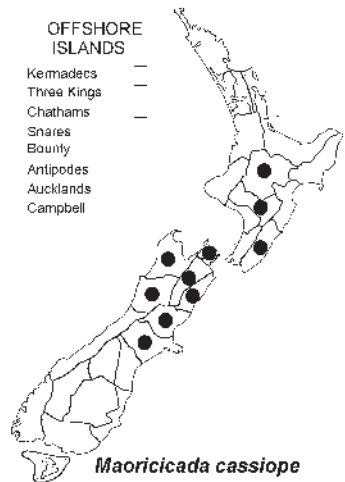
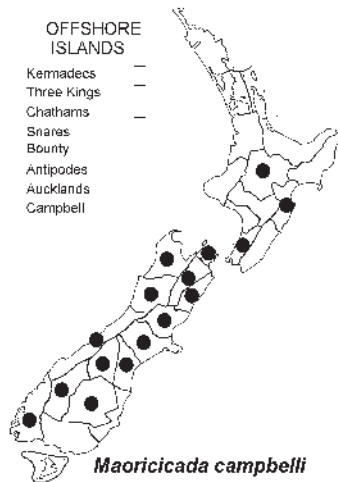
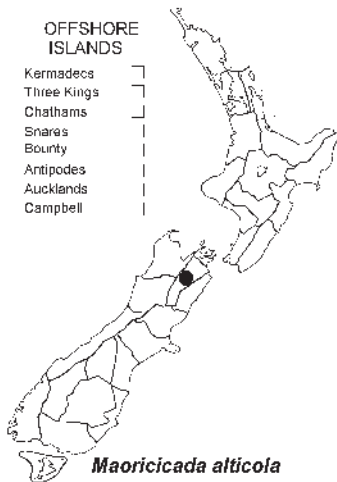
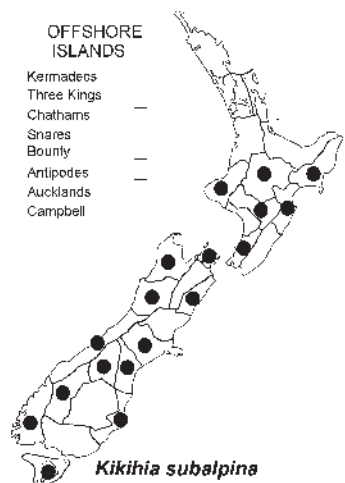
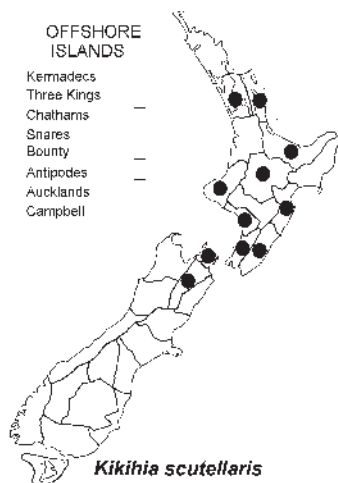
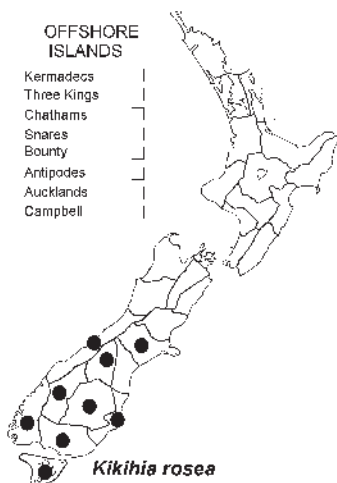
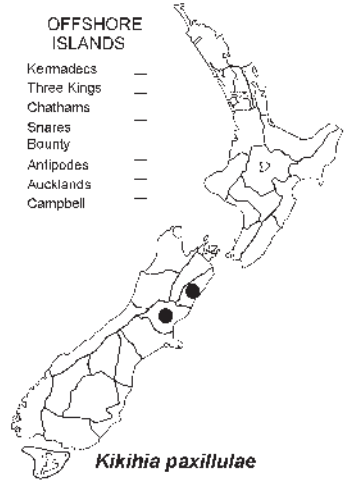
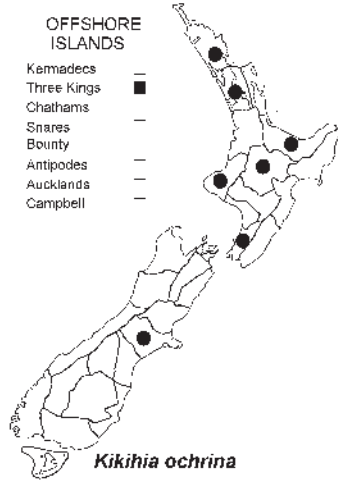
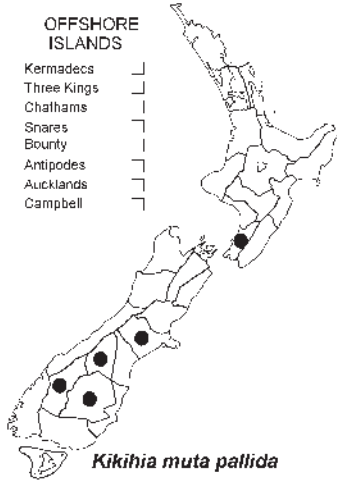
- Kermadecs
- Three Kings
- Chathams
- Snare
- Bounty
- Antipodes
- Auckland
- Campbell



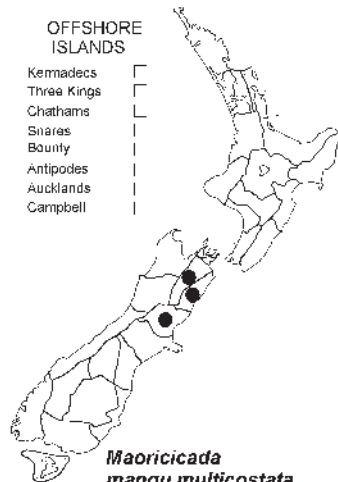
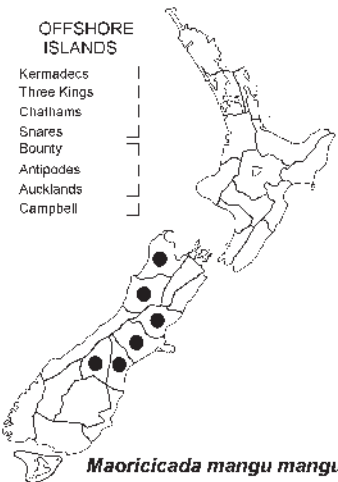
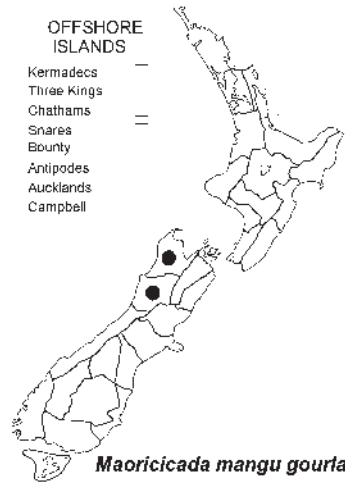
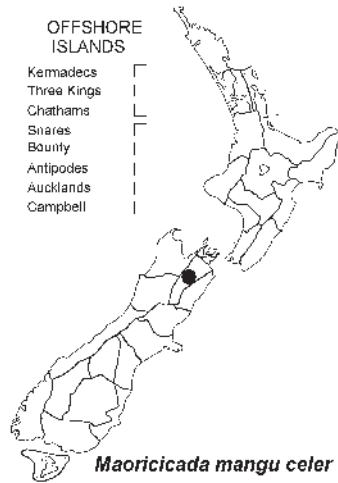
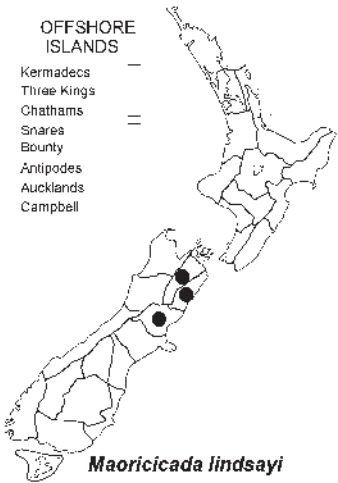
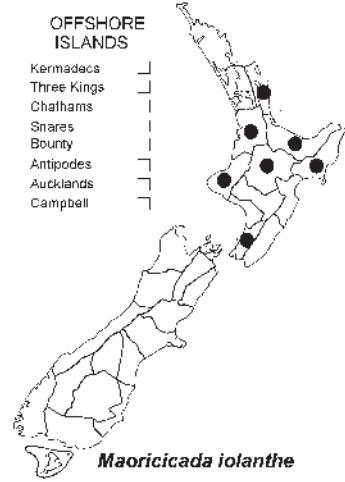
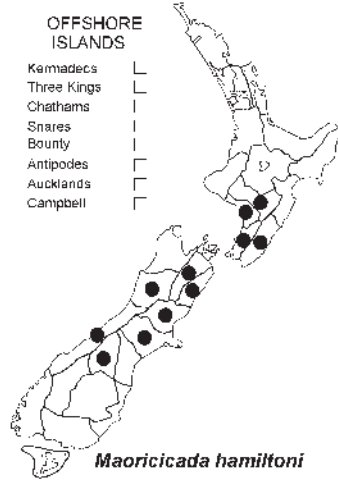
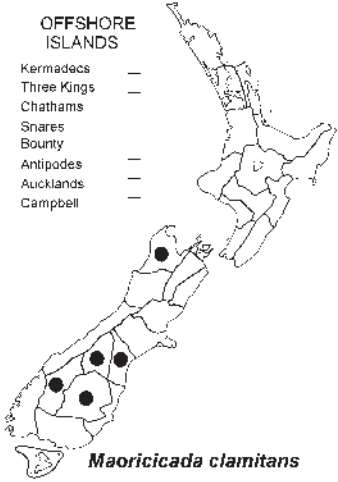
CICADIDAE



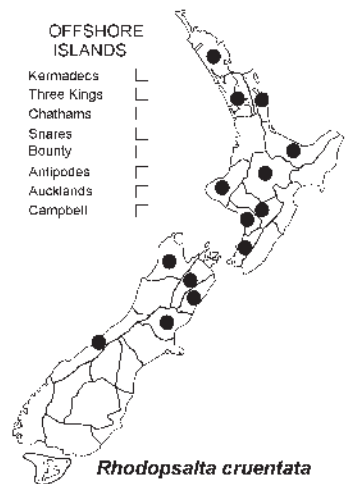
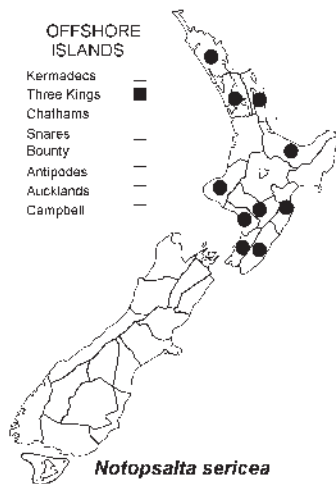
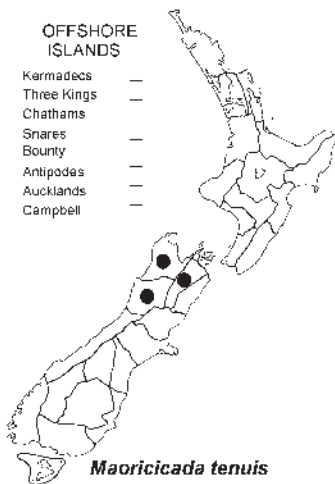
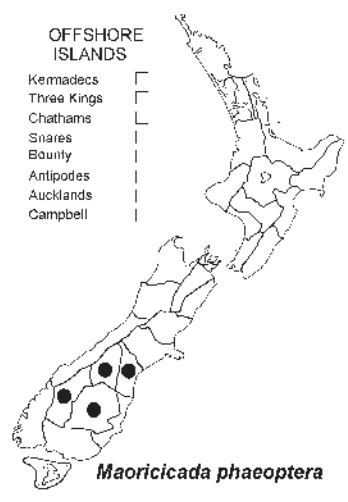
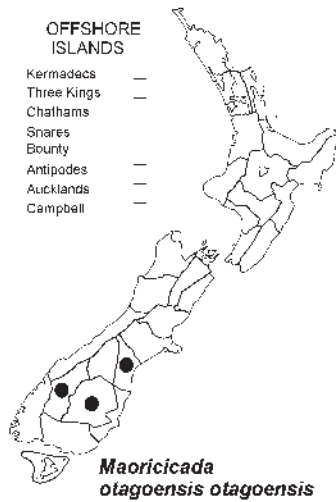
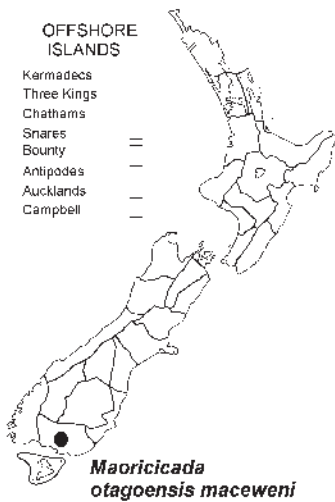
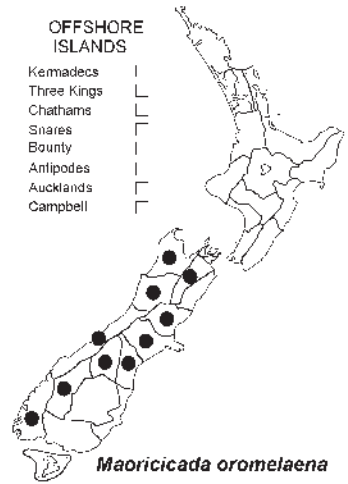
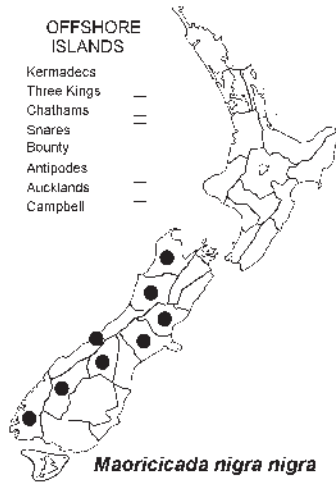
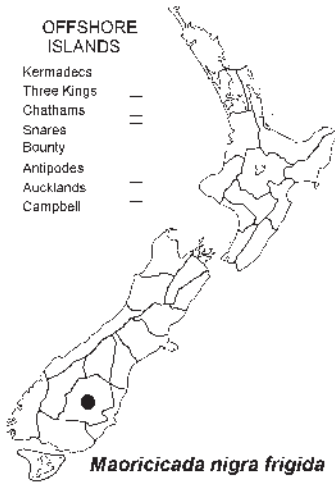
CICADIDAE



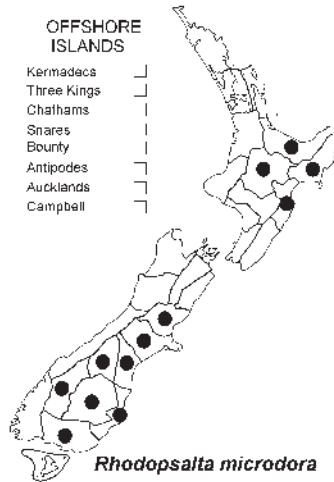
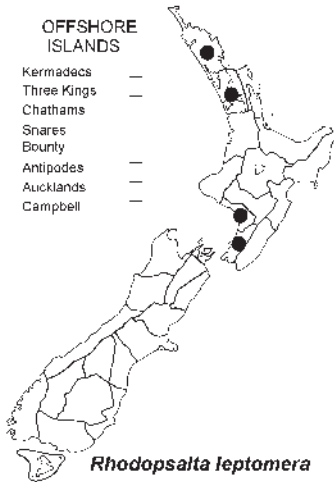
CICADIDAE



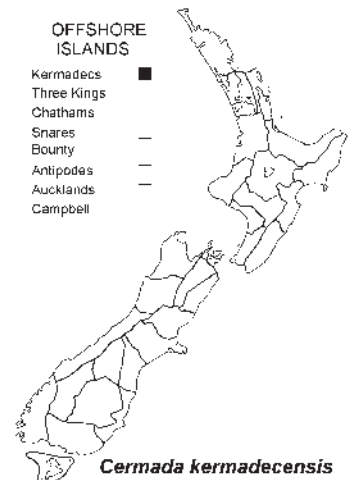
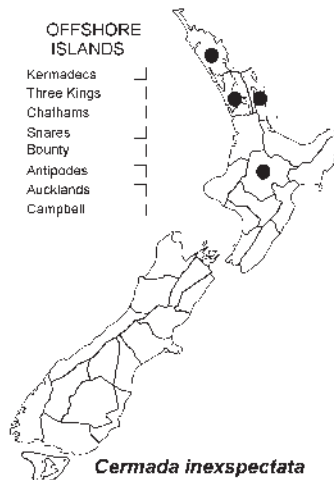
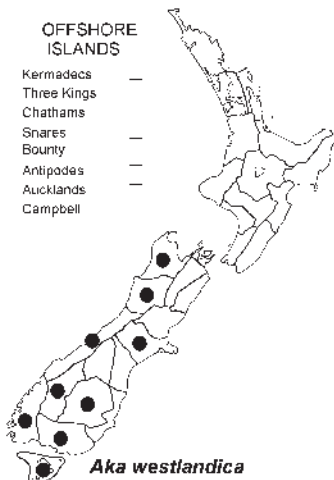
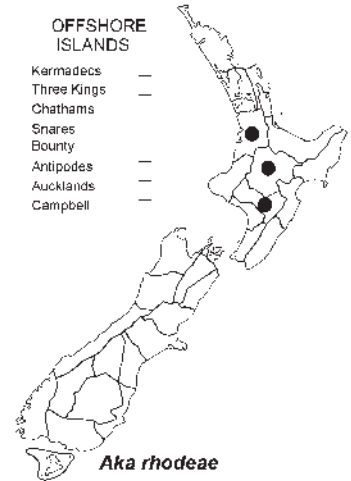
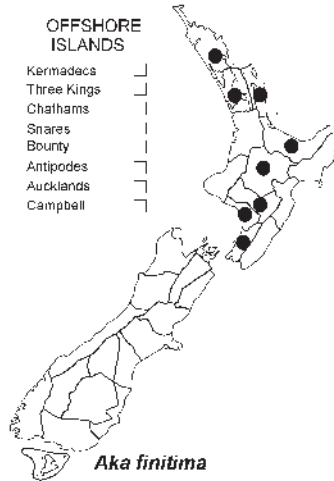
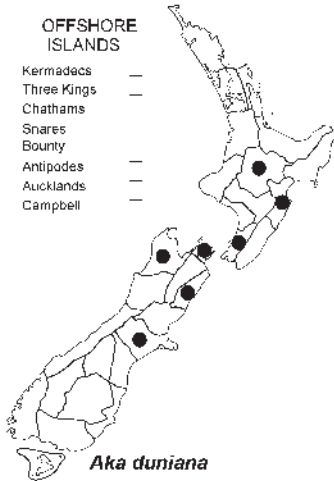
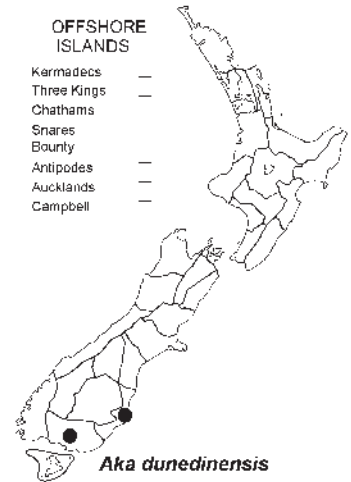
CICADIDAE



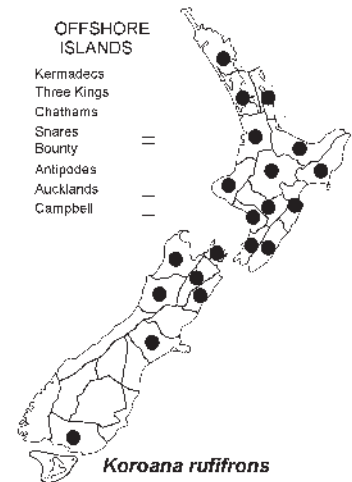
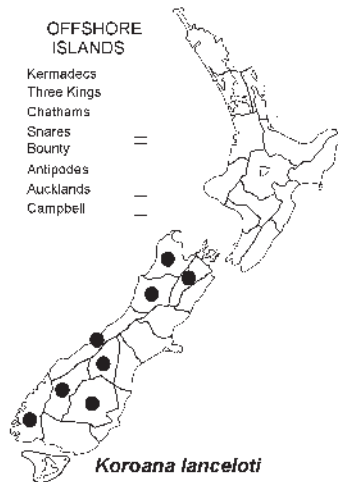
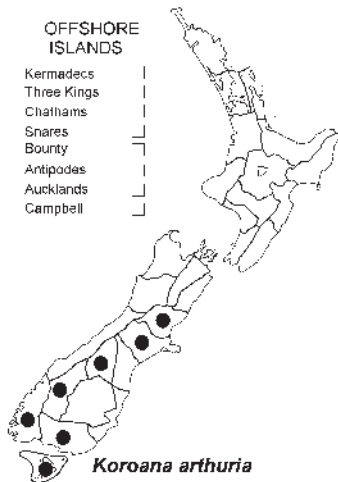
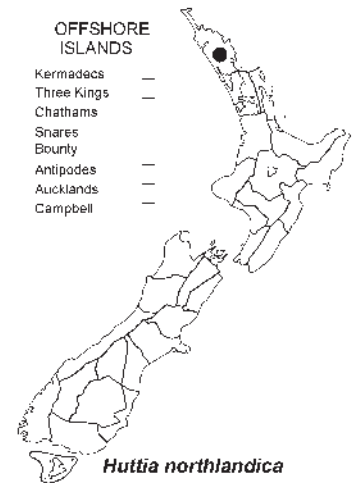
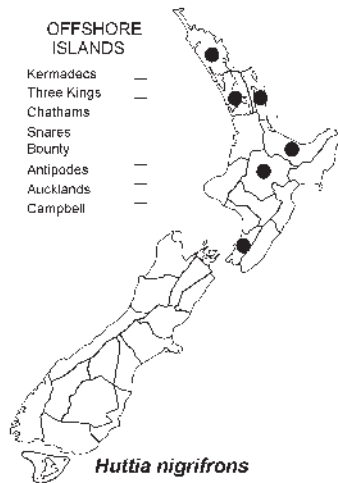
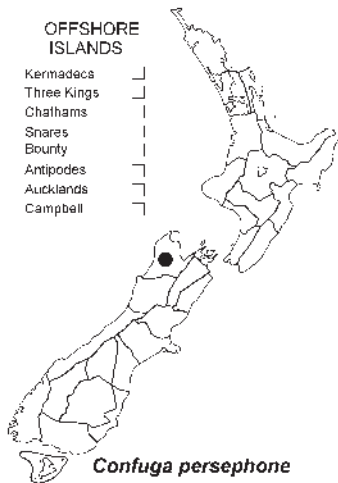
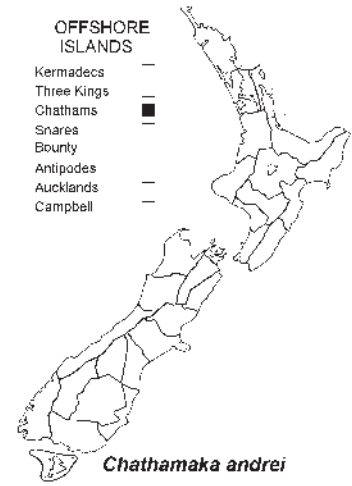
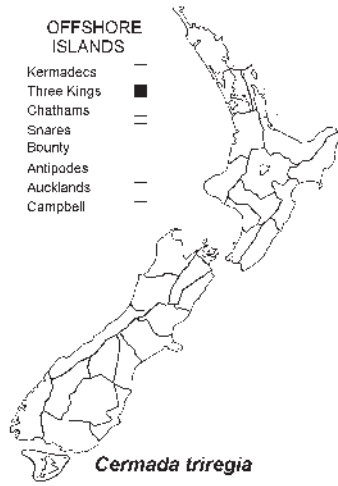
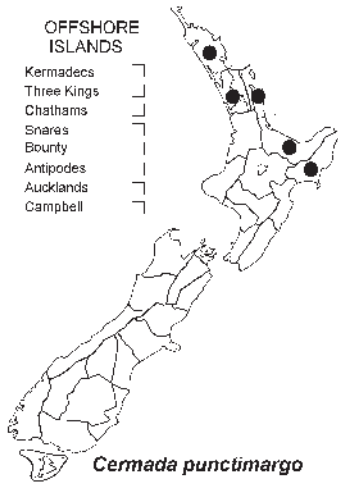
CICADIDAE



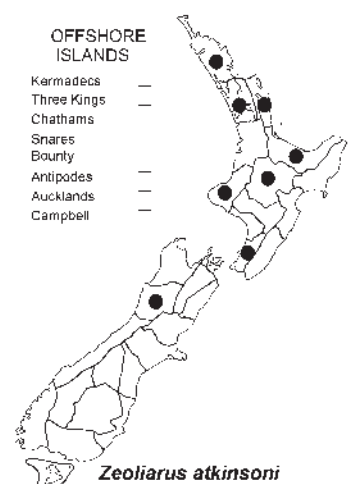
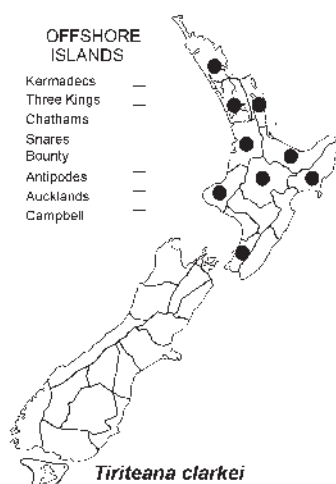
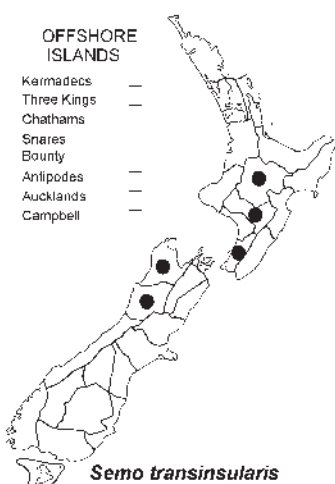
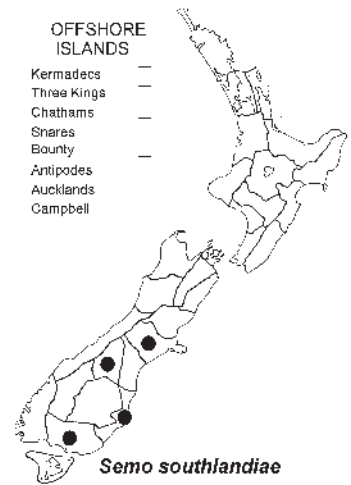
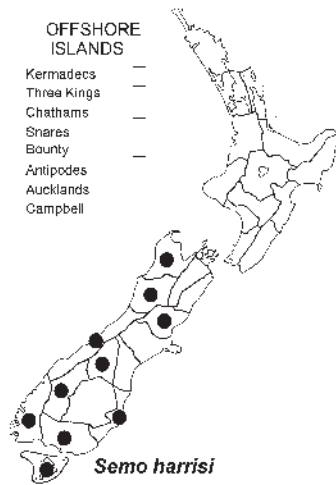
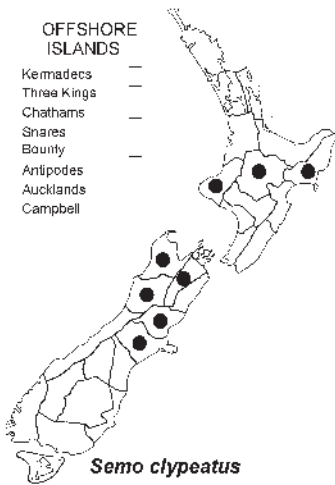
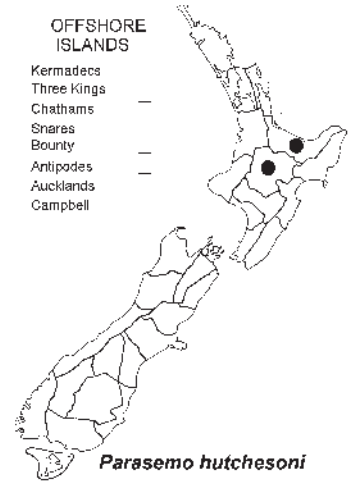
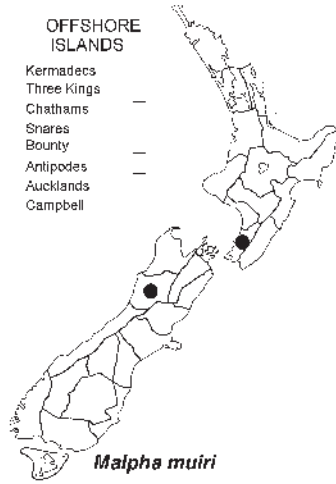
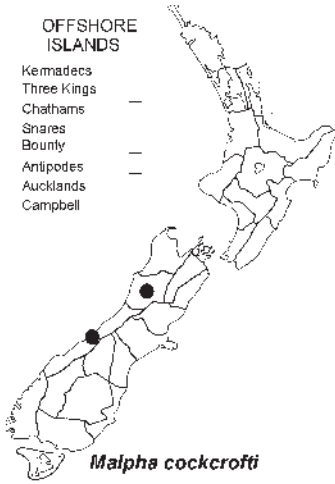
CIXIIDAE



CIXIIDAE



CIXIIDAE

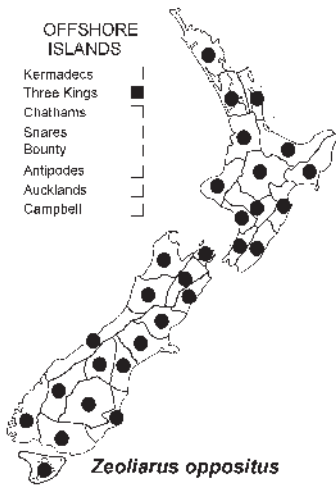


CIXIIDAE

DELPHACIDAE

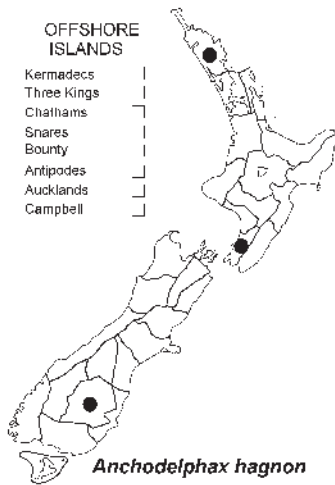
OFFSHORE ISLANDS

- Kermadecs |
- Three Kings ■
- Chathams |
- Snares |
- Bounty |
- Antipodes |
- Aucklands |
- Campbell |



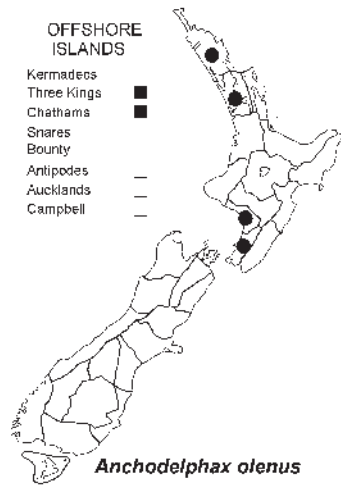
OFFSHORE ISLANDS

- Kermadecs |
- Three Kings |
- Chathams |
- Snares |
- Bounty |
- Antipodes |
- Aucklands |
- Campbell |



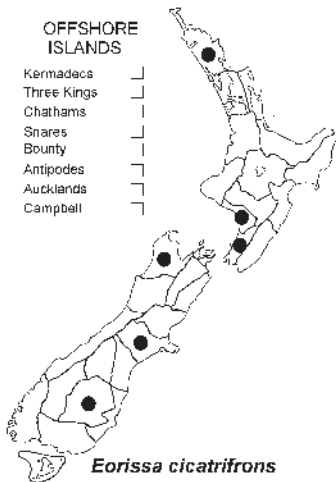
OFFSHORE ISLANDS

- Kermadecs |
- Three Kings ■
- Chathams |
- Snares |
- Bounty |
- Antipodes |
- Aucklands |
- Campbell |



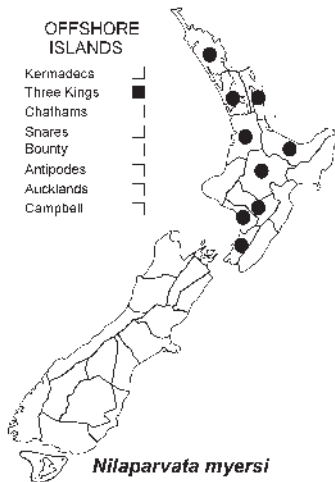
OFFSHORE ISLANDS

- Kermadecs |
- Three Kings |
- Chathams |
- Snares |
- Bounty |
- Antipodes |
- Aucklands |
- Campbell |



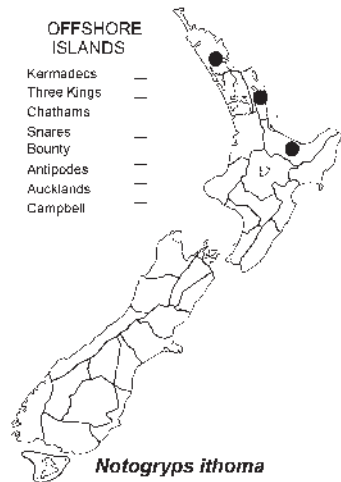
OFFSHORE ISLANDS

- Kermadecs |
- Three Kings ■
- Chathams |
- Snares |
- Bounty |
- Antipodes |
- Aucklands |
- Campbell |



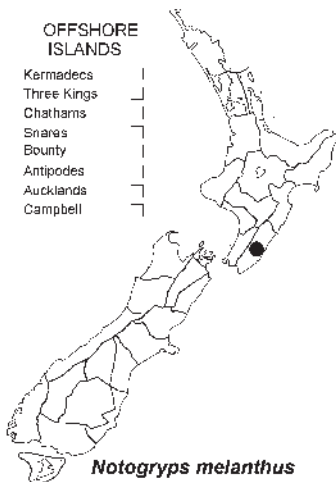
OFFSHORE ISLANDS

- Kermadecs |
- Three Kings |
- Chathams |
- Snares |
- Bounty |
- Antipodes |
- Aucklands |
- Campbell |



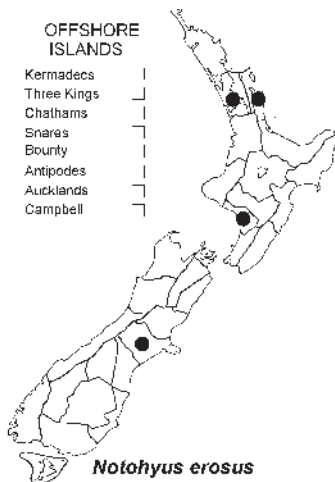
OFFSHORE ISLANDS

- Kermadecs |
- Three Kings |
- Chathams |
- Snares |
- Bounty |
- Antipodes |
- Aucklands |
- Campbell |



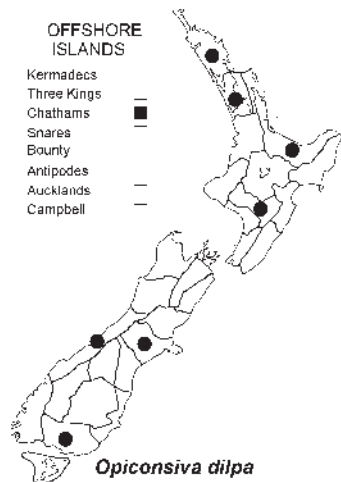
OFFSHORE ISLANDS

- Kermadecs |
- Three Kings |
- Chathams |
- Snares |
- Bounty |
- Antipodes |
- Aucklands |
- Campbell |

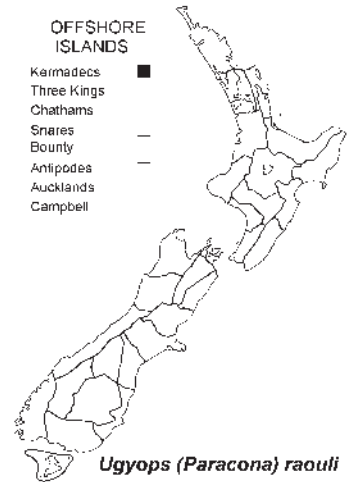
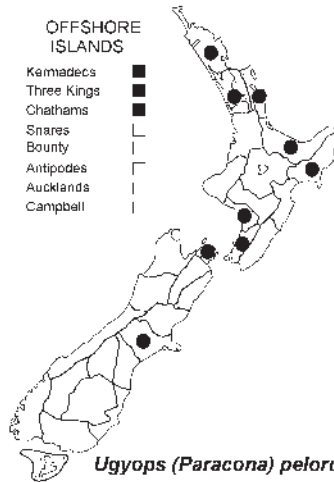
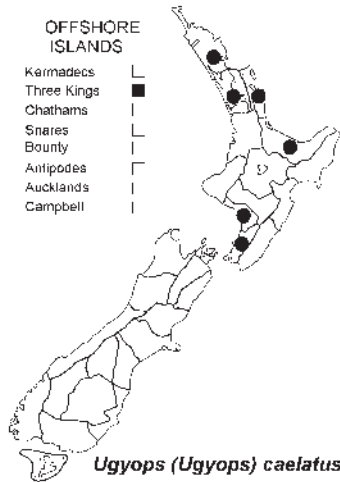
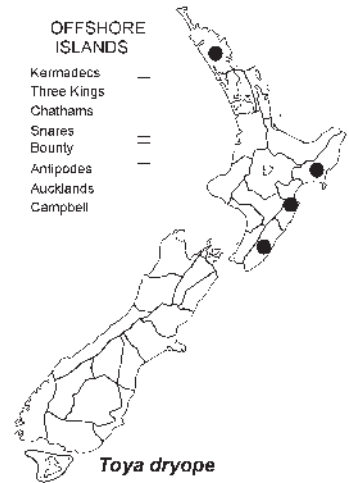
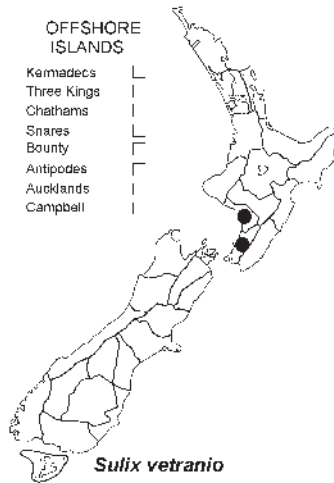
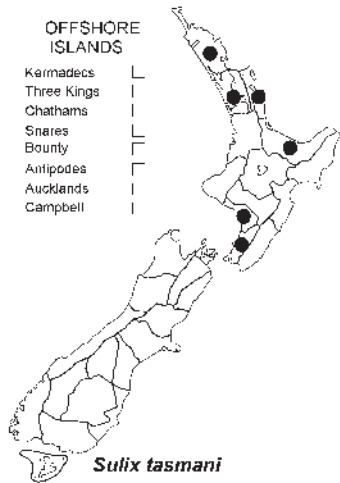
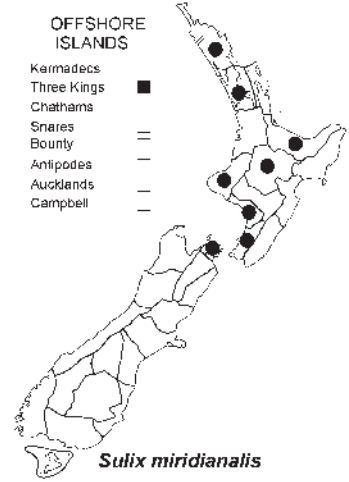
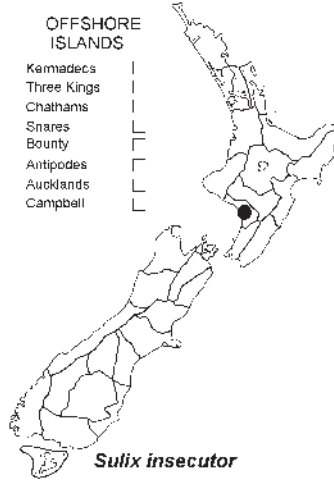
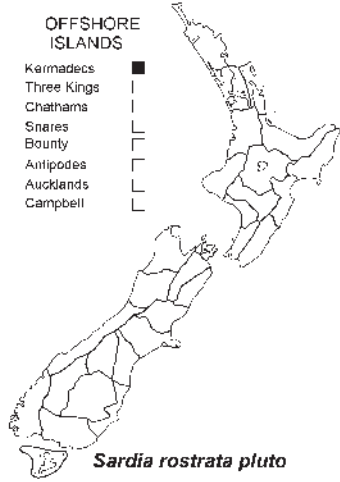


OFFSHORE ISLANDS

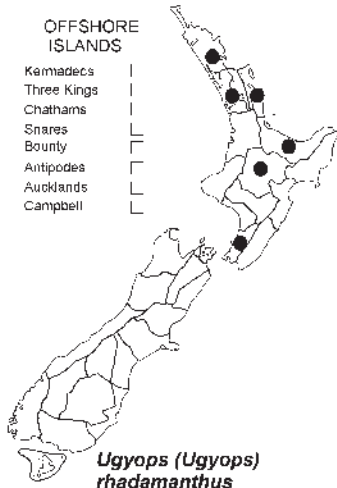
- Kermadecs |
- Three Kings |
- Chathams ■
- Snares |
- Bounty |
- Antipodes |
- Aucklands |
- Campbell |



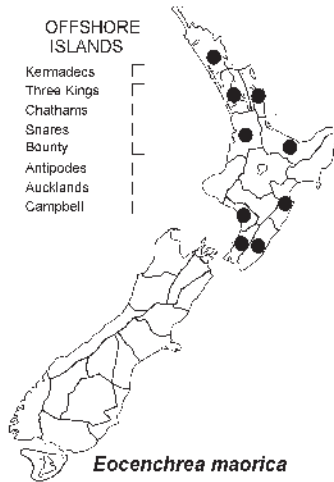
DELPHACIDAE



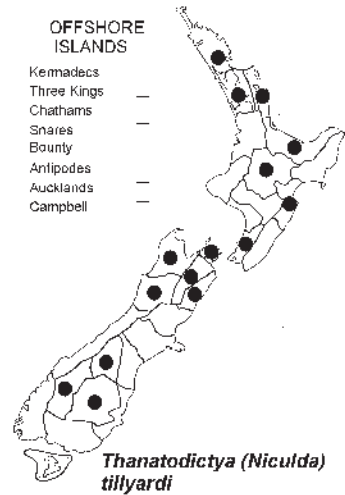
DELPHACIDAE



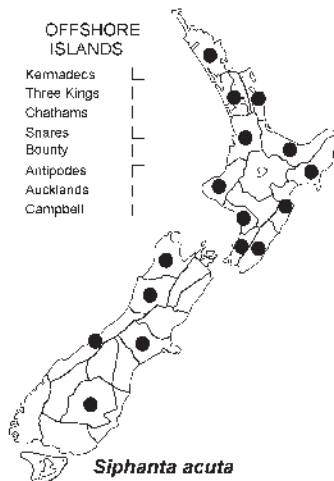
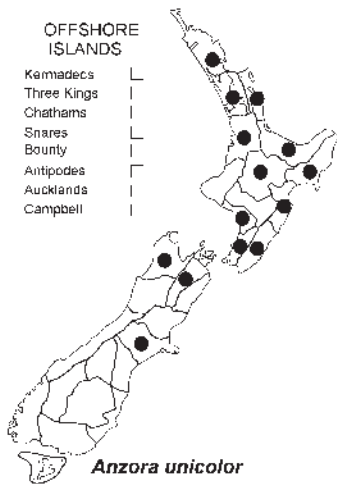
DERBIDAE



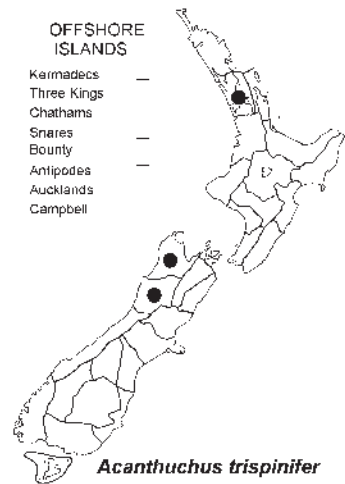
DICTYOPHARIDAE



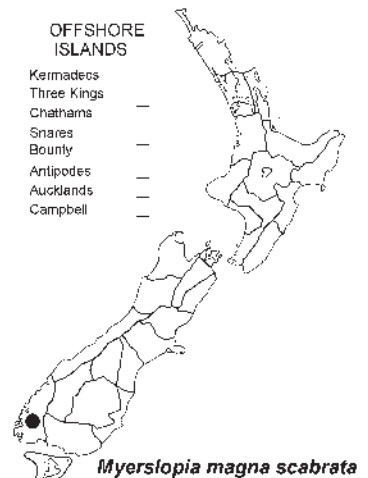
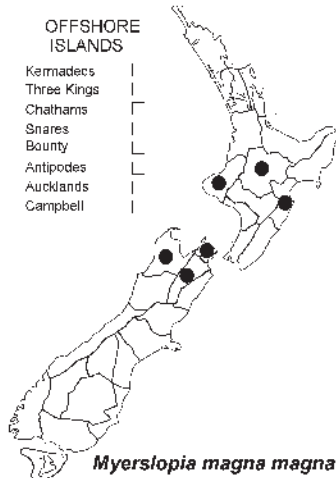
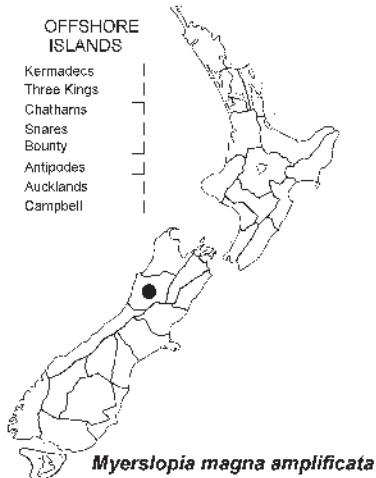
FLATIDAE



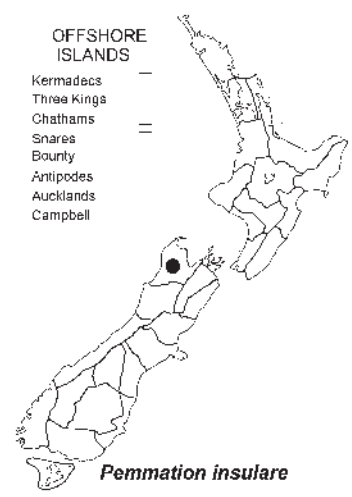
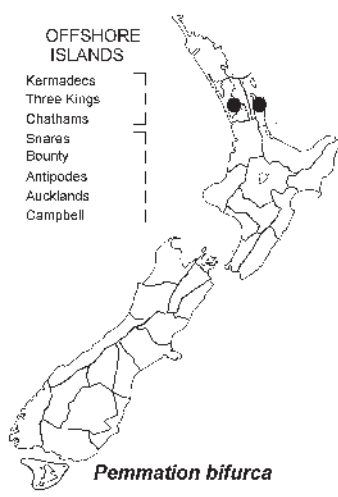
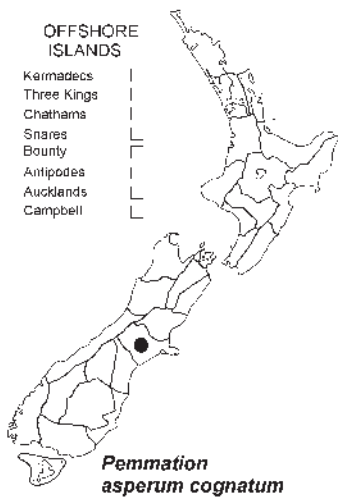
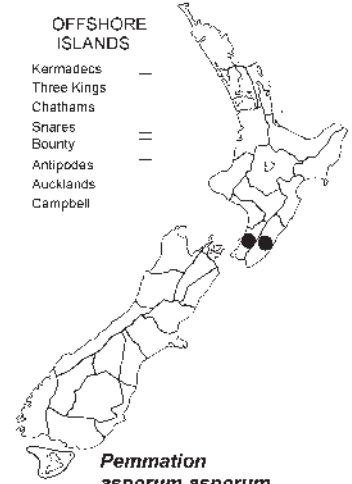
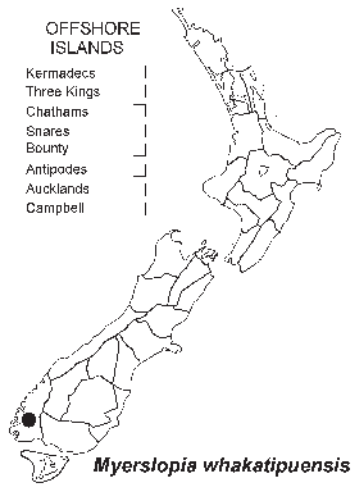
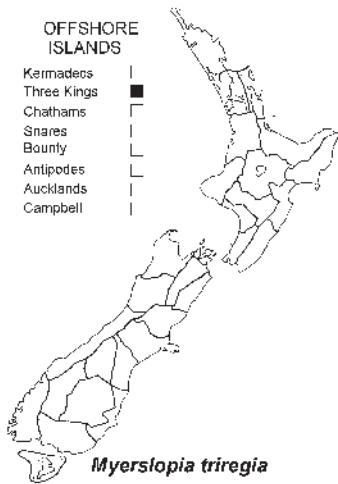
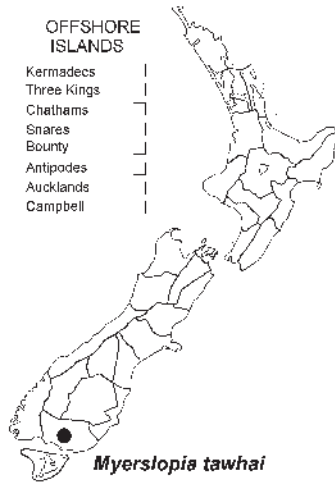
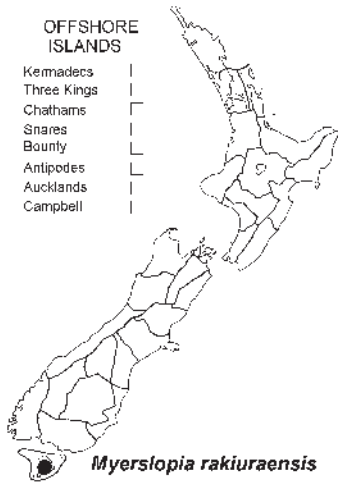
MEMBRACIDAE



MYERSLOPIIDAE



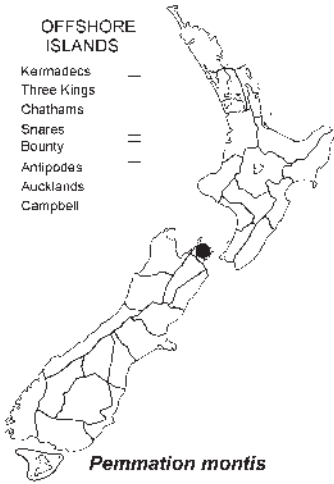
MYERSLOPIIDAE



MYERSLOPIIDAE

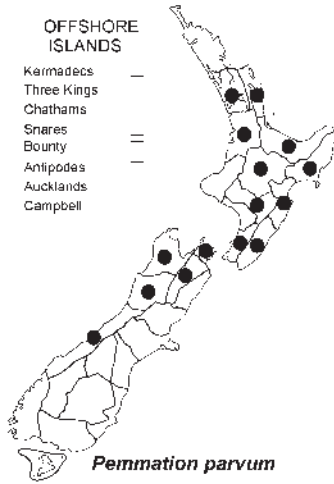
OFFSHORE ISLANDS

- Kermadecs —
- Three Kings —
- Chathams —
- Snares =
- Bounty —
- Antipodes —
- Aucklands —
- Campbell —



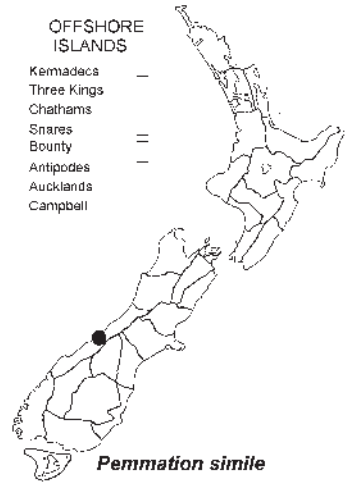
OFFSHORE ISLANDS

- Kermadecs —
- Three Kings —
- Chathams —
- Snares =
- Bounty —
- Antipodes —
- Aucklands —
- Campbell —



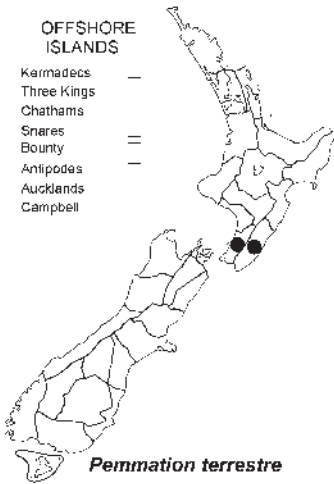
OFFSHORE ISLANDS

- Kermadecs —
- Three Kings —
- Chathams —
- Snares =
- Bounty —
- Antipodes —
- Aucklands —
- Campbell —



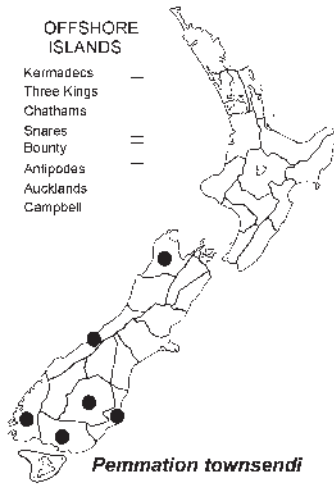
OFFSHORE ISLANDS

- Kermadecs —
- Three Kings —
- Chathams —
- Snares =
- Bounty —
- Antipodes —
- Aucklands —
- Campbell —



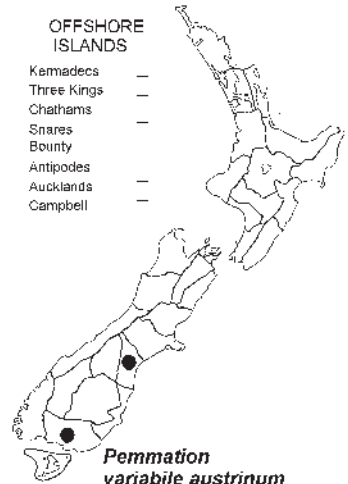
OFFSHORE ISLANDS

- Kermadecs —
- Three Kings —
- Chathams —
- Snares =
- Bounty —
- Antipodes —
- Aucklands —
- Campbell —



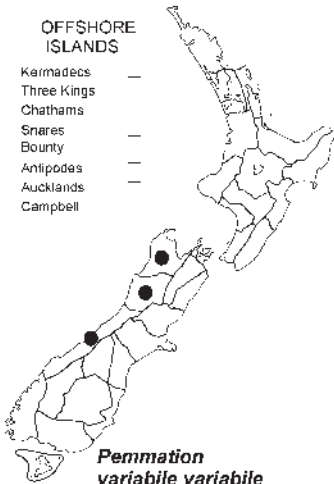
OFFSHORE ISLANDS

- Kermadecs —
- Three Kings —
- Chathams —
- Snares =
- Bounty —
- Antipodes —
- Aucklands —
- Campbell —



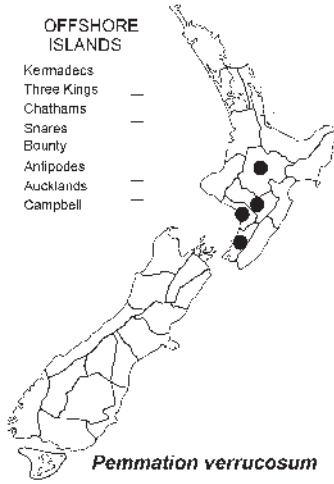
OFFSHORE ISLANDS

- Kermadecs —
- Three Kings —
- Chathams —
- Snares =
- Bounty —
- Antipodes —
- Aucklands —
- Campbell —



OFFSHORE ISLANDS

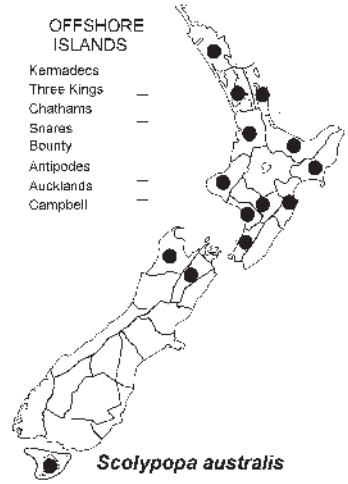
- Kermadecs —
- Three Kings —
- Chathams —
- Snares =
- Bounty —
- Antipodes —
- Aucklands —
- Campbell —



RICANIIDAE

OFFSHORE ISLANDS

- Kermadecs —
- Three Kings —
- Chathams —
- Snares =
- Bounty —
- Antipodes —
- Aucklands —
- Campbell —



TAXONOMIC INDEX

This index covers the nominal taxa mentioned in the text, regardless of their current status in taxonomy. In the case of synonyms, the combinations of generic and specific names listed are those originally published by authors, and may differ from combinations implicit in current usage. Taxa in **bold** indicate valid taxa. Page numbers in **bold** indicate main catalogue entries. The letter “f” after a page indicates a **figure**. The letter “m” indicates a **distribution map**. The letter “p” indicates a **type photograph**.

Acanthuchus Stål 79

Achilidae 30, 84

Achilinae 84

Achilini 84

Achilus Kirby 84

Acojassus Evans 66

aculeata Distant, Kalpa 95

aculeatum Knight,

Paradorydium 65, 66, 161p,
208m

acuminata (Walker),

Colgaroides 131

acuta (Walker), Siphanta 99,
219m

acuta Walker, Poeciloptera 99

adventitosus Evans,

Batracomorphus 67, 153p,
202m

Agandecca White 85

agni (Knight), Anzygina 73, 151p,
201m

agni Knight, Zygina 73

Aka White 30, 85

albicincta Erichson, Aphrophora 35

albicinctus (Erichson), Bathyllus
35, 199m

albicinctus Distant, Orosius 63

albigutta Walker, Lepyrionia 35

Alodeltocephalus Evans 130

alticola Dugdale & Fleming,
Maoricicada 47, 169p, 211m

Amphipsalta Fleming 28, 29, 40

amplificata Knight, Myerslophia
magna 29, 80, 187p, 219m

anadyomene Kirkaldy,

Thanatodictya (Niculda) 98

Anchodelphax Fennah 94

andrei Larivière, Chathamaka
88, 179p, 215m

angusta Walker, Cicada 41

angusta (Walker), Kikihia 28, 41,
45, 209m

angusta, Melampsalta 46

angustatus (Osborn),

Batracomorphus 27, 67, 202m

angustatus Osborn, Bythoscopus
67

annectens White, Agandecca

30, **85, 199m**

ansonae Myers, Erythroneura 74

Anyllis China 39

Anzora Medler 99

Anzygina Fletcher & Larivière
20, 27, 28, **73**

Aphrophoridae 25, 34

aphrophoroides Walker, Dechitus
100

aprilina Hudson, Cicada 45

Arahura Knight 20, 27, 55

Arawa Knight 20, 27, 56, 57, 58
arche Walker, Cicada 47

argentata Evans, Thamnotettix 64

argentatus (Evans), Orosius 27,
64, 207m

arthuria Myers, Koroana 89,
180p, 215m

Asiracinae 93

aspera Knight, Myerslophia 81

aspera cognata Knight, Myerslophia
82

asperum asperum (Knight),

Pemmaton 29, 81, 189p, 220m

asperum cognatum (Knight),

Pemmaton 29, 82, 189p, 220m

aspilus Walker, Cixius 87

Athysanini 55

Athysanus Burmeister 57, 58

atkinsoni Myers, Ollarius 90, 91

atkinsoni (Myers), Zeoliarus 30,
91, 216m

atrata Goding & Froggatt,
Notopsalta 53

attenuata Distant, Toya 97

aurata Hamilton & Morales,
Carystoterpa 35, 199m

australensis Kirkaldy,

Xestocephalus 79

australis Walker, Flatoides 100

australis Walker, Pochazia 100

australis (Walker), Scolypopa
31, 100, 131, 221m

austrina Knight, Myerslophia
variabilis 83

austrinum (Knight), Pemmaton
variabile 83, 191p, 221m

awae Myers, Cicadula 58, 130

awae (Myers), Limotettix 58,
154p, 204m

Balclutha Kirkaldy 61

barrattae Fletcher & Larivière,
Anzygina 27, 28, 73, 74, 151p,
201m

Basilioterpa Hamilton & Morales
35

Bathyllus Stål 35

Batracomorphus Lewis 66

betulicola Wagner, Kybos 72

bicolor Evans, Euacanthella 64

bicolor Distant, Ossana 66

Bidis Walker 93

bifurca Knight, Myerslophia 82

bifurca (Knight), Pemmaton 29,
82, 189p, 220m

bilinea Walker, Cicada 44

billi Fletcher & Larivière,
Anzygina 74

brighami Kirkaldy, Paradorydium 65

brunnea Evans, Euacanthella 64

brunneus Evans, Scaphetus 57,
59, 163p, 209m

bullata Hamilton & Morales,
Basilioterpa 35, 149p, 199m

caelata White, Cona 93

caelatus (White), Ugyops
(Ugyops) 93, 218m

callista Hudson, Melampsalta muta
47

campbelli (Myers), Maoricicada
28, 40, **48, 169p, 211m**

campbelli Myers, Melampsalta 47, 48

cantonis Oman, Nesaloha 63

capicola Stål, Athysanus 58

capicola (Stål), Exitianus 58

Carphosoma Royer 65

Carystoterpa Lallemand 23, 27,
35

cassiniae Myers, Diedrocephala 69

cassiniae (Myers),

Novothymbris 69, 157p, 205m

casiope Hudson, Cicada 48

casiope (Hudson), Maoricicada
40, **48, 170p, 211m**

castor Knight, Novothymbris 69,
71, 157p, 206m

cauta (Myers), Kikihia 28, 41, 42,
210m

- cauta Myers, Melampsalta 42
Cedusinae 98
Cedusini 98
celer Dugdale & Fleming,
Maoricicada mangu 50, 172p,
 212m
Centrotinae 79
Cephalelini 77
Cercopoidea 34
Cermada Emeljanov 87
Chathamaka Larivière 30, 88
chelyon Hamilton & Morales,
Carystoterpa 36, 199m
chilensis (Nielson), Mapuche
 80
 chilensis Nielson, Myerslophia 80
Cicadellidae 27, 55
Cicadetta Amyot 55
Cicadettinae 40
Cicadettini 40
Cicadidae 28, 39
Cicadoidea 39
Cicadomorpha 34
cicatrifrons Fennah, Eorissa 94,
 183p, 217m
 cincta Walker, Cicada 54
 cinerea Kirkaldy, Sephena 99
 cinerescens Hudson, Cicada muta
 46
cingulata (Fabricius),
Amphipsalta 19, 40, 41, 209m
 cingulata Fabricius, Tettigonia 40
 cingulata obscura Hudson, Cicada
 40
cithara Knight, Novothymbris
69, 158p, 206m
Cixiidae 30, 85
Cixiinae 85
Cixiini 85
Cixius Latreille 87, 88
clamitans Dugdale & Fleming,
Maoricicada 48, 170p, 212m
clarkei Myers, Tiriteana 90,
 216m
clypeatus White, Semo 91, 216m
coccinea (Guérin-Ménéville),
Deribia 131
cockcrofti Myers, Malpha 31, 32,
90, 181p, 216m
 cognata Knight, Myerslophia aspera
 82
cognatum (Knight), Pemmation
asperum 29, 82, 189p, 220m
 condylus Knight, Limotettix 59
Confuga Fennah 88
 conspicua Distant, Siphantoides 99
 convexa Walker, Lepyrionia 35
convicta (Distant), Kikihia 28, 41
 Corbulo Fennah 95
 coronifer Marshall, Deltocephalus
 60, 61
crataegi (Douglas), Edwardsiana
 75, 131
 cruentata, Melampsalta 42, 44, 45,
 46
cruentata (Fabricius),
Rhodopsalta 19, 54, 55, 213m
 cruentata Fabricius, Tettigonia 39,
 53, 54
cumberi Fleming, Kikihia cutora
42, 164p, 210m
 cupido Walker, Poeciloptera 99
curtus Knight, Paracephaleus
 28, 77, 161p, 207m
cuspid Knight, Paradorydium
65, 208m
 cutora Walker, Cicada 42, 43
cutora (Walker), Kikihia 28, 41,
 43
cutora cumberi Fleming, Kikihia
42, 164p, 210m
cutora cutora (Walker), Kikihia
42, 210m
cutora exulis (Hudson), Kikihia
 25, 43, 165p, 210m
 cyathea Myers, Erythroneura 74
 Dechitus Walker 100
decimaquartus (Schrank),
Rhytidodus 68, 208m
Delphacidae 30, 92
Delphacinae 94
Delphacini 94
Deltocephalinae 55
Deltocephalini 60
 Deltodorydium Kirkaldy 65
dentata Knight, Arahura 56,
 152p, 201m
Derbidae 30, 97
Dictyopharidae 31, 98
Dictyopharinae 98
Dictyopharini 98
 dilpa Kirkaldy, Delphax 95, 96
dilpa (Kirkaldy), Opiconsiva 30,
96, 217m
 discalis, Ricania 131
 distinctus Motschulsky,
 Deltocephalus 60
distinguendus Kirschbaum,
Idiocerus 67, 203m
 dorsalis Motschulsky, Deltocephalus
 60
 Dorydium Burmeister 65
 Drylix Edwards 58
 dryope Kirkaldy, Delphax 97
dryope (Kirkaldy), Toya 30, 97,
 218m
dugdalei Knight, Arawa 56, 153p,
 202m
dugdalei Fleming, Kikihia 28, 41,
43, 45, 165p, 210m
dumbletoni (Ghauri), Anzygina
 27, 73, 201m
 dumbletoni Ghauri, Zygina 73
dunedinensis Larivière, Aka 86,
 178p, 214m
 dunensis Myers, Diedrocephala 70
duniana (Myers), Aka 86, 178p,
 214m
 duniana Myers, Malpha 86
 Edijassus Evans 66
Edwardsiana Zachvatkin 75
 elegans Costa, Cromna 99
 Empoasca Walsh 72
Empoascini 72
Eocenchrea Muir 98
Eorissa Fennah 94
erosus Fennah, Notohyus 95,
 184p, 217m
 erythrocephala Ferrari, Cicadula 63
Erythroneurini 73
Euacanthella Evans 64
Euacanthellinae 64
Euacanthellini 64
Eupelicinae 65
Eupteryx Curtis 76
 Eurinoscopus Kirkaldy 66
 everetti Distant, Lombokia 99
Exitianus Ball 58
 exitiosa Uhler, Cicadula 58
extremitatis Knight,
Novothymbris 69, 70, 158p,
 206m
exulis (Hudson), Kikihia cutora
 25, 43, 165p, 210m
 exulis Hudson, Melampsalta 43
eylesi Knight, Novothymbris 69,
 70, 158p, 206m
falcata Knight, Novolopa 28, 77,
 156p, 205m
fieberi (Edwards), Macrosteles
62, 204m
 filum Linnavuori, Balclutha 62
fingens (Walker), Carystoterpa
36, 199m
 fingens Walker, Ptyelus 36

- finitima** (Walker), Aka 86, 214m
 finitimus Walker, Cixius 85, 86
flammeus Kirby, Achilus 84, 199m
Flatidae 31, 98
Flatinae 99
Flatini 99
flavescens Hudson, Cicada muta 43
flexicosta Walker, Cicada 40
flexuosa Linnavuori, Balclutha 62
freyi Lindberg, Nesotettix 79
frigida Dugdale & Fleming,
Maoricicada nigra 51, 174p, 213m
froggatti (Baker), *Edwardsiana* 27, 75, 131, 203m
Fulgoroidea 84
Fulgoromorpha 84
fuliginosa Myers, Melampsalta 44
fuscovaria Distant, *Opiconsiva* 95
fusiformis Hamilton & Morales,
Carystoterpa 35

Gonyphlepsia Jacobi 98
gourlayi Knight, *Arahura* 56, 152p, 201m
gourlayi Dugdale & Fleming,
Maoricicada mangu 50, 173p, 212m
gourlayi Evans, *Paradorydium* 65, 66, 161p, 208m
gracilispinus Stål, *Acanthuchus* 79
greeni Distant, *Nilaparvata* 95

hagnon Fennah, *Anchodelphax* 94, 183p, 217m
hamiltoni (Myers), *Maoricicada* 49, 171p, 212m
hamiltoni Myers, Melampsalta 49
harrisi Myers, *Huttia* 88, 92
harrisi Knight, *Limotettix* 59, 154p, 204m
harrisi (Myers), *Semo* 31, 92, 181p, 216m
helenae Myers, Koroana 89
hinemoa Myers, *Diedrocephala* 70
hinemoa (Myers),
Novothybris 69, 70, 206m
horologium Fleming, *Kikihia* 28, 41, 43, 44, 166p, 210m
Horouta Knight 20, 27, 60
hospes Kirkaldy, *Deltocephalus* 60, 61
hudsoni Myers, *Cephalelus* 77

hudsoni (Myers),
Paracephaleus 28, 77, 161p, 207m
hudsonica Myers, *Diedrocephala* 70
hutchesoni Larivière,
Parasemo 91, 181p, 216m
Huttia Myers 88
hyalinus (Osborn), *Japananus* 131
Hygiops Amyot & Audinet-Serville 93

lassinae 66
lassini 66
Idiocerinae 67
Idiocerus Lewis 67
ikana Hamilton & Morales,
Carystoterpa 36, 149p, 199m
illustris Distant, *Maiestas* 60
Inazuma Ishihara 60
incertus Evans, *Limotettix* 130
incisa (Matsumura), *Balclutha* 62, 202m
inconstans Knight, *Horouta* 60, 154p, 203m
indistincta Myers, Melampsalta 53
indivulsa Walker, Cicada 40
Inemadara Ishihara 60
inexpectata (Larivière),
Cermada 87, 179p, 214m
inexpectatus Larivière, Cixius 87
infula Knight, *Novolopa* 78, 156p, 205m
insecutor Fennah, *Sulix* 96, 184p, 218m
Insulanus Linnavuori 60
insulare Evans, *Paradorydium* 65, 66, 162p, 208m
insulare (Knight), *Pemmaton* 29, 82, 189p, 220m
insularis Evans, *Euacanthella* 64, 65
insularis Knight, *Myerslophia* 82
interior Walker, Cixius 87, 89
iolanthe Hudson, Cicada 49
iolanthe (Hudson), *Maoricicada* 40, 49, 171p, 212m
iris Myers, *Malpha* 90
irroratus Lewis,
Batracomorphus 66
Irunula Ribaut 63
ithoma Fennah, *Notogryps* 95, 184p, 217m
ix Myers, *Erythroneura* 74

jactator White, *Aphrophora* 38, 39
jactator (White),
Pseudaphronella 27, 39, 200m

Japananus Ball 131

Kalpa Distant 95
kermadecensis (Myers),
Cermada 25, 87, 179p, 214m
kermadecensis Myers, Cixius 87
kiekie Myers, *Erythroneura* 74
Kikihia Dugdale 23, 28, 41
knights Webb & Viraktamath,
Maiestas 60, 61, 204m
Koroana Myers 89
kuscheli Knight, *Novolopa* 78, 156p, 205m
Kybos Fieber 72

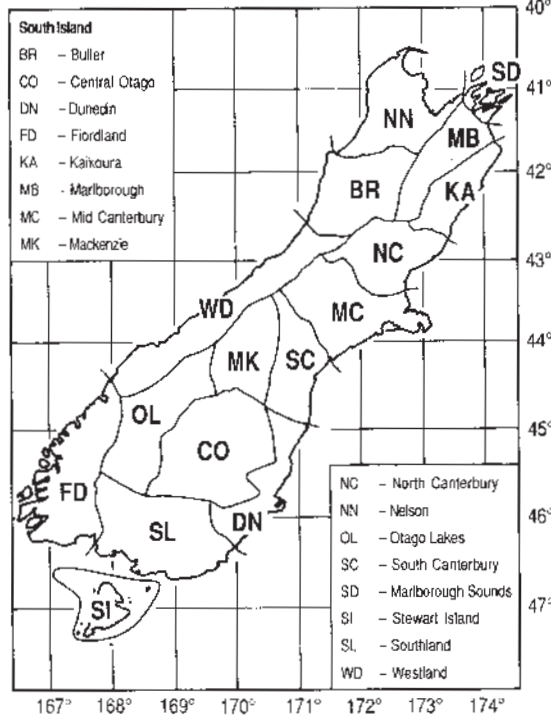
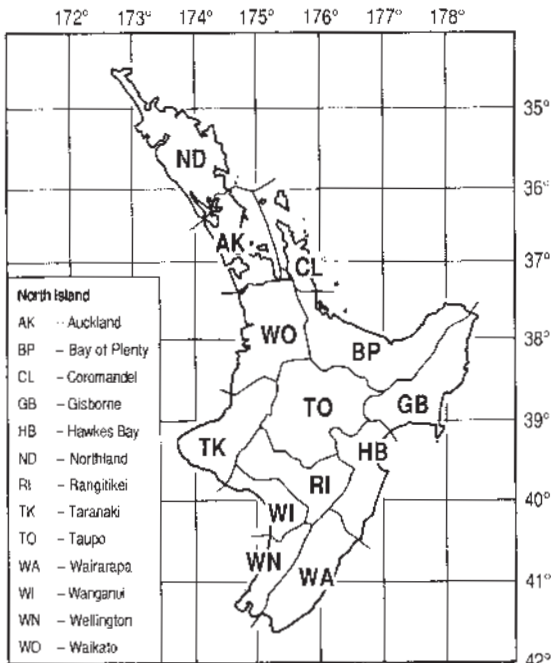
laetus Alfken, *Ptyelus trimaculatus* 37
lanceloti Larivière, *Koroana* 89, 180p, 215m
laneorum Fleming, *Kikihia* 28, 41, 44, 166p, 210m
Ledrinae 68
lentiginosus Kirkaldy, *Eurinoscopus* 66
leptocarpi Myers, *Cephalelus* 77
leptomera Myers, Melampsalta 54
leptomera (Myers),
Rhodopsalta 54, 214m
lethierryi (Edwards),
Edwardsiana 75, 131, 203m
Limotettix Sahlberg 20, 27, 58, 1 Lindbergana Metcalf 79
lindbergi (Linnavuori), *Kybos* 72, 203m
lindsayi (Myers), *Maoricicada* 40, 49, 172p, 212m
lindsayi Myers, *Pauropsalta* 49
Lombokia Distant 99
longinquus (Kirkaldy),
Alodeltocephalus 130
longula (Hudson), *Kikihia* 28, 41, 44, 167p, 210m
longula Hudson, Melampsalta muta 44
lucida (Butler), *Balclutha* 62, 202m
lugens (Stål), *Nilaparvata* 30

maceweni Dugdale & Fleming,
Maoricicada otagoensis 52, 175p, 213m
Macropsinae 68
Macrosteles Fieber 62
Macrostelini 61
maculata Knight, *Novolopa* 28, 78, 156p, 205m

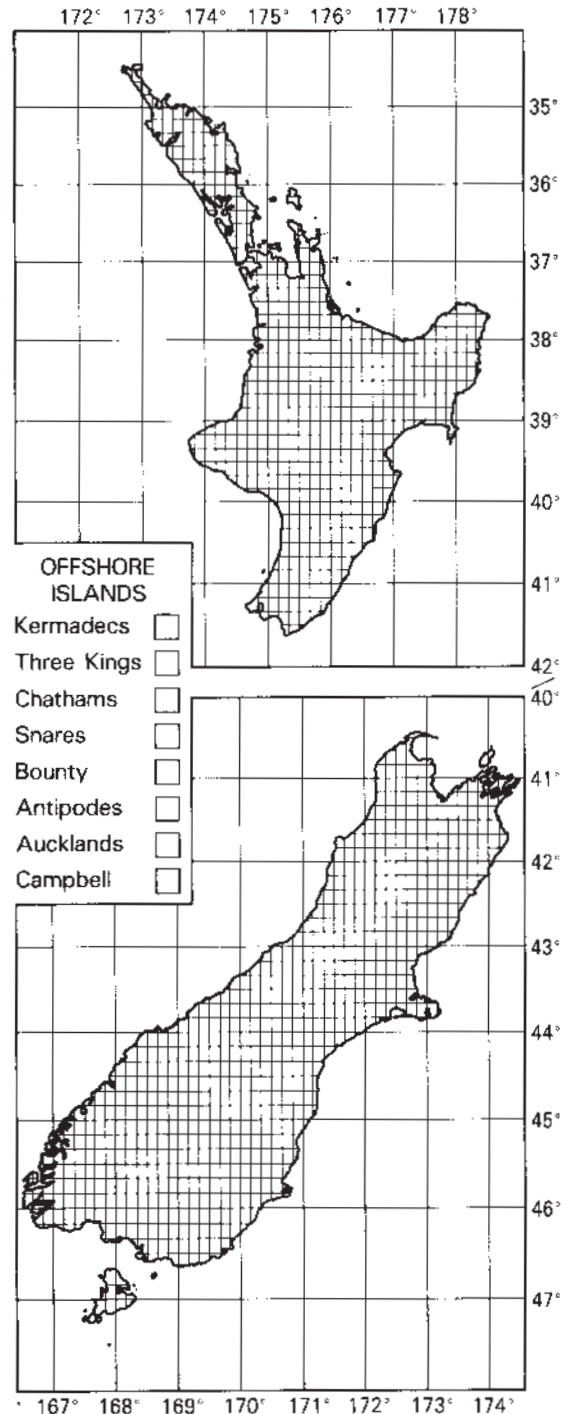
- magna amplificata Knight**,
Myerslophia 29, 80, 187p, 219m
- magna Evans**, **Myerslophia** 80
- magna magna Evans**,
Myerslophia 29, 80, 187p, 219m
- magna scabrata Knight**,
Myerslophia 29, 80, 187p, 219m
- Maiestas Distant** 60
- Malpha Myers** 90
- mangu White, **Melampsalta** 50
- mangu celer Dugdale & Fleming**, **Maoricicada** 50, 172p, 212m
- mangu gourlayi Dugdale & Fleming**, **Maoricicada** 50, 173p, 212m
- mangu mangu (White)**,
Maoricicada 48, 50, 212m
- mangu multicostata Dugdale & Fleming**, **Maoricicada** 50, 173p, 212m
- maori Hamilton & Morales**,
Carystoterpa 36, 149p, 199m
- maorica Kirkaldy, **Cenchrea** 98
- maorica Myers, **Diedrocephala** 70
- maorica Myers, **Dikraneura** 72
- maorica (Kirkaldy)**, **Eocenchrea** 30, 98, 219m
- maorica (Myers)**, **Matatua** 27, 72, 73, 155p, 204m
- maorica (Myers)**, **Novothybris** 69, 70, 206m
- maorica Myers, **Pauropsalta** 48
- Maoricicada Dugdale** 20, 28, 47
- Mapuceha Szwedó** 80
- marginalis Walker, **Cixius** 91
- Matatua Knight** 20, 27, 72
- melanthus Fennah**, **Notogryps** 95, 184p, 217m
- melissae Curtis**, **Eupteryx** 27, 76, 203m
- mellerborgi (Stål)**, **Ricanoptera** 131
- Membracidae** 29, 79
- Membracoidea** 55
- mendoza Walker, **Cicada** 40
- meridiana (Muir), **Sulix** 96, 97
- microdora Hudson, **Melampsalta** 55
- microdora (Hudson)**,
Rhodopsalta 55, 177p, 214m
- Mimodrylix Zachvatkin 58
- minima Hamilton & Morales**,
Carystoterpa 36, 149p, 200m
- minor Hamilton & Morales**,
Carystoterpa 37, 150p, 200m
- minor Hudson, **Cicada muta** 54
- miridiana (Muir), **Delphacodes** 96, 97
- miridiana (Muir)**, **Sulix** 96, 218m
- moerens Stål, **Lepyronia** 35
- montanus Evans, **Acojassus** 66
- montanus Evans, **Deltocephalus** 57
- montanus Evans**,
Paracephaleus 77, 131
- montis Knight, **Myerslophia** 82
- montis (Knight)**, **Pemmation** 29, 82, 190p, 221m
- montistympani Jacobi, **Gonyphlepsia** 98
- montivaga Knight**, **Matatua** 27, 72, 155p, 205m
- montivaga Knight**, **Novolopa** 78, 157p, 205m
- muii Myers**, **Malpha** 31, 32, 90, 181p, 216m
- multicostata Dugdale & Fleming**, **Maoricicada mangu** 50, 173p, 212m
- muta, **Cicada** 44
- muta (Fabricius)**, **Kikihia** 28, 41
- muta Fabricius, **Tettigonia** 39, 44
- muta callista Hudson, **Melampsalta** 47
- muta cinerescens Hudson, **Cicada** 46
- muta flavescens Hudson, **Cicada** 43, 44
- muta longula Hudson, **Melampsalta** 44
- muta minor Hudson, **Cicada** 54
- muta muta, **Cicadetta** 46
- muta muta (Fabricius)**, **Kikihia** 40, 44, 45, 210m
- muta muta, **Melampsalta** 40, 42, 43, 44, 46
- muta pallida (Hudson)**, **Kikihia** 40, 45, 167p, 211m
- muta pallida Hudson, **Melampsalta** 45
- muta rufescens Hudson, **Cicada** 47
- muta sub-alpina Hudson, **Cicada** 41, 47
- muta subalpina Hudson,
Melampsalta 43, 44
- myersi Fleming, **Cicadetta** 51
- myersi (Fleming)**, **Maoricicada** 31, 49, 51, 174p, 212m
- myersi Muir**, **Nilaparvata** 30, 95, 183p, 217m
- Myerslopella Evans** 30
- Myerslophia Evans** 29, 80
- Myerslophiidae** 29, 80
- Myerslophiinae** 80
- Myerslophiini** 80
- negata (White)**, **Arawa** 56, 202m
- negatus White, **Athysanus** 56, 57, 58
- Neotrepes Stål** 39
- nervosa Walker, **Cicada** 53
- nervosa (Walker), **Melampsalta** 48, 50
- Nesaloha Oman 63
- Nesoclutha Evans** 63
- Nesotettix Lindberg 79
- Niculda Kirkaldy** 98
- nigra Myers, **Melampsalta** 51
- nigra frigida Dugdale & Fleming**,
Maoricicada 51, 174p, 213m
- nigra nigra (Myers)**,
Maoricicada 51, 213m
- nigrifrons Myers**, **Huttia** 31, 88, 180p, 215m
- Nilaparvata Distant** 95
- norrisi Evans, **Eutettix** 58
- northlandica Larivière**, **Huttia** 89, 180p, 215m
- notata Knight**, **Novothybris** 69, 70, 71, 158p, 206m
- nothofagi Evans**, **Zelopsis** 27, 68, 163p, 209m
- notialis Knight**, **Novothybris** 69, 70, 71, 159p, 206m
- notivena Walker, **Bidis** 93
- Notocephalus Jacobi** 77
- Notogryps Fennah** 95
- Notohyus Fennah** 95
- Notopsalta Dugdale** 53
- novella (Metcalf)**, **Arawa** 57, 202m
- novellus Metcalf, **Deltocephalus** 57
- Novolopa Evans** 28, 77
- Novothybris Evans** 20, 27, 69
- obliquus (Evans)**,
Alodeltocephalus 130
- obscura Hudson, **Cicada cingulata** 40
- obscura Evans, **Nesoclutha** 63
- ochrina Walker, **Cicada** 45
- ochrina (Walker)**, **Kikihia** 28, 40, 41, 45, 211m
- ochrina, **Melampsalta** 43
- Oecleini** 90
- olenus Fennah**, **Anchodelphax** 94, 183p, 217m

- Oliarius Stål 90, 91**
Opiconsiva Distant 95
 oppositus Walker, Cixius 91
oppositus (Walker), Zeoliarus 91, 217m
Opsiini 63
orientalis (Matsumura), Orosius 64
oromelaena (Myers), Maoricicada 40, 48, 52, 175p, 213m
 oromelaena Myers, Melampsalta 52
Orosius Distant 63
 oryzae Matsumura, Deltocephalus 60
 Ossana Distant 66
otagoensis maceweni Dugdale & Fleming, Maoricicada 52, 175p, 213m
otagoensis otagoensis Dugdale & Fleming, Maoricicada 52, 176p, 213m
ovalis Evans, Xestocephalus 79, 209m
- pallida (Hudson), Kikihia muta 40, 45, 167p, 211m**
 pallida Hudson, Melampsalta muta 45
 pallida (Evans), Nesoclutha 63
 pallidus Evans, Edijassus 66
 pallidus Evans, Eusceloscopus 63
pallidus Knight, Limotettix 59, 154p, 204m
palustris Evans, Euacanthella 64, 65, 203m
Paracephaleus Evans 77
Paracona Fennah 93
Paradorydiini 65
Paradorydium Kirkaldy 20, 27, 65
 paradoxum Burmeister, Dorydium 65
 Parasalurnis Distant 99
Parasemo Larivière 91
 parva Evans, Myerslophia 81, 82
parvum (Evans), Pemmation 29, 82, 190p, 221m
paxillulæ Fleming, Kikihia 28, 41, 46, 168p, 211m
pelorus Fennah, Ugyops (Paracona) 93, 185p, 218m
Pemmation Hamilton 29, 81
Pentastirini 90
percheronii Guérin-Méneville, Ugyops 93
peregrina Knight, Novothymbris 69, 70, 71, 159p, 206m
- persephone Fennah, Confuga 30, 31, 88, 215m**
phaeoptera Dugdale & Fleming, Maoricicada 52, 176p, 213m
 Phalainesthes Kirkaldy 99
Philaenus Stål 38
philpotti Myers, Paradorydium 27, 66, 162p, 208m
phryne (Kirkaldy), Nesoclutha 27, 63, 205m
 phryne Kirkaldy, Nesosteles 63
plebleius (Kirkaldy), Exitianus 58, 203m
 plebeius Kirkaldy, Nephrotettix 58
Plectoderini 85
 pluto Kirkaldy, Hadeodelphax 96
pluto (Kirkaldy), Sardia rostrata 96, 218m
pollux Knight, Novothymbris 69, 71, 159p, 207m
Pseudaphronella Evans 27, 38
Pseudaphrophora Schmidt 38
pulchra Knight, Arawa 57, 153p, 202m
pulicarius Van Duzee, Xestocephalus 79
 pullatus Evans, Deltocephalus 59
pullatus (Evans), Limotettix 59, 204m
punctata Knight, Novothymbris 69, 71, 159p, 207m
 punctatus Evans, Eurinoscopus 67
punctimargo (Walker), Cermada 87, 215m
 punctimargo Walker, Cixius 87
 quadricincta, Melampsalta 48, 50
- rakiuraensis Szewo, Myerslophia 81, 187p, 220m**
ramsayi (Knight), Anzygina 27, 28, 73, 74, 151p, 201m
 ramsayi Knight, Zygina 74
 raouli Muir, Micromasoria 93
raouli (Muir), Ugyops (Paracona) 25, 93, 218m
Recilia Edwards 60, 61
reticulata Knight, Arahura 55, 56, 152p, 201m
rhadamanthus Fennah, Ugyops (Ugyops) 94, 185p, 219m
rhodeae Larivière, Aka 86, 178p, 214m
 rhodei Larivière, Aka 86
Rhodopsalta Dugdale 53, 55
Rhytidodus Fieber 68
- Ribautiana Zachvatkin 76**
Ricaniidae 31, 100
rieki Knight, Balclutha 62, 130
 rosea Walker, Cicada 46
rosea (Walker), Kikihia 28, 40, 41, 46, 211m
 roseicincta Walker, Poeciloptera 99
rostrata Melichar, Sardia 96
rostrata pluto (Kirkaldy), Sardia 96, 218m
 rufescens Hudson, Cicada muta 47
 ruffifrons Walker, Cixius 89
ruffifrons (Walker), Koroana 89, 215m
- Sagmatiini 23, 30**
Sagmation Hamilton 30
 salubris Knight, Arawa 56, 57
 samuelsoni Knight, Deltocephalus 61
samuelsoni (Knight), Maiestas 61, 155p, 204m
Sardia Melichar 96
scabrata Knight, Myerslophia magna 29, 80, 187p, 219m
Scaphetus Evans 20, 27, 59
Scaphytopiini 131
 schauinslandi Kirkaldy, Phalainesthes 99
Scolypopa Stål 100
 scutellaris Walker, Cicada 46, 53
scutellaris (Walker), Kikihia 28, 41, 46, 47, 211m
Semo White 30, 89, 91
Semonini 91
 sericea Walker, Cicada 53
sericea (Walker), Notopsalta 28, 53, 213m
sertum Knight, Paradorydium 65, 66, 162p, 208m
 sidnica Kirkaldy, Erythroneura 73
simile (Knight), Pemmation 29, 83, 190p, 221m
 similis Knight, Myerslophia 83
simus Knight, Scaphetus 59, 163p, 209m
Siphanta Stål 99
Siphantini 99
 Siphantoides Distant 99
smaragdula (Fallén), Kybos 72, 203m
solitaria Knight, Novothymbris 69, 71, 160p, 207m
southlandiae Larivière & Hoch, Semo 92, 182p, 216m

- spumarius (Linnaeus), Philaenus 38**, 200m
stewartensis Evans, Paradoridium 66
- strepitans (Kirkaldy), Amphipsalta 40**, 41, 164p, 209m
strepitans Kirkaldy, Cicadetta 40
striola Fallén, Cicada 58
sub-alpina Hudson, Cicada muta 41, 47
- subalpina (Hudson), Kikihia 28**, 40, 41, 43, 44, **47**, 168p, 211m
subalpina Hudson, Melampsalta muta 44
- subtacta (Walker), Carystoterpa 25, 37**, 200m
subtactus Walker, Ptyelus 37
- subvirescens (Butler), Carystoterpa 36, 37**, 200m
subvirescens Butler, Ptyelus 37
subviridis Metcalf, Stirellus 60
- Sulix Fennah 30, 96**
- taedia (Kirkaldy), Arawa 57
taedius (Kirkaldy), Dectocephalus 57, 58
tararua Myers, Diedrocephala 71
- tararua (Myers), Novothymbris 69, 71**, 160p, 207m
- Tartessinae 68**
tasmani Muir, Delphacodes 97
- tasmani (Muir), Sulix 97**, 185p, 218m
- tawhai Szwedo, Myerslophia 81**, 188p, 220m
- tearohai Szwedo, Myerslophia 29, 81**, 188p, 220m
- tenerrima (Herrich-Schäffer), Ribautiana 27, 76**, 209m
- tenuis Dugdale & Fleming, Maoricicada 53**, 177p, 213m
- Terentiini 79**
- terrestre (Knight), Pemmation 29, 83**, 190p, 221m
terrestris Knight, Myerslophia 83
- Thanatodictya Kirkaldy 31, 98**
- Thymbrini 68**
- tillyardi Myers, Thanatodictya (Niculda) 31, 98**, 186p, 219m
- Tiriteana Myers 90**
- toetoe (Cumber), Anzygina 27**, 28, 73, **74**, 151p, 201m
toetoe Cumber, Erythroneura 74
Togacephalus Matsumura 60, 61
- townsendi Knight, Myerslophia 83
- townsendi Evans, Novolopa 77, 78**, 157p, 205m
- townsendi (Knight), Pemmation 29, 83**, 191p, 221m
- Toya Distant 97**
- transinsularis Larivière & Hoch, Semo 92**, 182p, 216m
transversus Metcalf, Euscelis 58
- trimaculata (Butler), Carystoterpa 36, 37**, 200m
trimaculatus Butler, Ptyelus 35, 37
trimaculatus laetus Alfken, Ptyelus 37
trimaculatus tristis Alfken, Ptyelus 37
- triregia (Larivière), Cermada 88**, 179p, 215m
- triregia Knight, Myerslophia 29, 81**, 188p, 220m
- triregius Larivière, Cixius 87, 88
- trispinifer (Fairmaire), Acanthuchus 29, 79**, 219m
trispinifer Fairmaire, Centrotus 79
- tristis (Alfken), Carystoterpa 27, 37, 38**, 200m
tristis Hudson, Cicada 46
tristis Alfken, Ptyelus trimaculatus 37
- Typhlocyba Germar 131**
- Typhlocybinae 72**
- Typhlocybini 75**
- Ugyopini 93**
- Ugyops Guérin-Méneville 93**
- Ulopinae 77**
- Ulopini 77**
- unicolor (Walker), Anzora 31, 99**, 219m
unicolor Walker, Massila 99
urbana Stål, Scolypopa 100
- vagans Hamilton & Morales, Carystoterpa 38**, 150p, 200m
- vagans Knight, Novothymbris 69, 70, 71**, 160p, 207m
- variable austrinum (Knight), Pemmation 83**, 191p, 221m
- variabile variabile (Knight), Pemmation 84**, 191p, 221m
variabilis Knight, Myerslophia 84
variabilis austrina Knight, Myerslophia 83
- variegata Knight, Arawa 56, 57**, 58, 153p, 202m
- verrucosa Knight, Myerslophia 84
- verrucosum (Knight), Pemmation 29, 84**, 191p, 221m
- vetranio Fennah, Sulix 96, 97**, 185p, 218m
vetus Knight, Dectocephalus (Recilia) 61
- vetus (Knight), Maiestas 61**, 155p, 204m
- viridinervis Matsumura, Balclutha 61, 62**, 202m
- watti Knight, Paradoridium 65, 66**, 162p, 208m
westlandiae Larivière & Hoch, Semo 88, 92
- westlandica Larivière, Aka 86**, 178p, 214m
westwoodi White, Dorydium 66
- westwoodi (White), Paradoridium 66**, 208m
- whakatipuensis Szwedo, Myerslophia 81**, 188p, 220m
- Xestocephalinae 79**
- Xestocephalini 79**
- Xestocephalus Van Duzee 79**
- zealandica (Myers), Anzygina 27, 74**, 152p, 201m
zealandica Myers, Diedrocephala 69, 71
zealandica Myers, Erythroneura 74
- zealandica (Myers), Novothymbris 69, 70, 71**, 160p, 207m
- zealandica (Boisduval), Amphipsalta 40, 41**, 209m
zealandica Boisduval, Cicada 40, 41
- Zelopsis Evans 20, 27, 68**
- Zeoliarus Larivière & Fletcher 20, 30, 90**
- Zygina Fieber 75**



Area codes and boundaries used to categorise specimen locality data (after Crosby *et al.* 1976)



Base-map for plotting collection localities; this may be photocopied without copyright release

TITLES IN PRINT / PUNA TAITARA TAA

- 1 **Terebrantia** (Insecta: Thysanoptera). *Laurence A. Mound & Annette K. Walker*. ISBN 0-477-06687-9, 23 Dec 1982, 120 pp. \$29.95
- 2 **Osoiriinae** (Insecta: Coleoptera: Staphylinidae). *H. Pauline McColl*. ISBN 0-477-06688-7, 23 Dec 1982, 96 pp. \$18.60
- 3 **Anthribidae** (Insecta: Coleoptera). *B.A. Holloway*. ISBN 0-477-06703-4, 23 Dec 1982, 272 pp. \$41.00
- 4 **Eriophyoidea except Eriophyinae** (Arachnida: Acari). *D.C.M. Manson*. ISBN 0-477-06745-X, 12 Nov 1984, 144 pp. \$29.95
- 5 **Eriophyinae** (Arachnida: Acari: Eriophyoidea). *D.C.M. Manson*. ISBN 0-477-06746-8, 14 Nov 1984, 128 pp. ... \$29.95
- 6 **Hydraenidae** (Insecta: Coleoptera). *R.G. Ordish*. ISBN 0-477-06747-6, 12 Nov 1984, 64 pp. \$18.60
- 7 **Cryptostigmata** (Arachnida: Acari) – a concise review. *M. Luxton*. ISBN 0-477-06762-X, 8 Dec 1985, 112 pp. \$29.95
- 8 **Calliphoridae** (Insecta: Diptera). *James P. Dear*. ISBN 0-477-06764-6, 24 Feb 1986, 88 pp. \$18.60
- 9 **Protura** (Insecta). *S.L. Tuxen*. ISBN 0-477-06765-4, 24 Feb 1986, 52 pp. \$18.60
- 10 **Tubulifera** (Insecta: Thysanoptera). *Laurence A. Mound & Annette K. Walker*. ISBN 0-477-06784-0, 22 Sep 1986, 144 pp. \$34.65
- 11 **Pseudococcidae** (Insecta: Hemiptera). *J.M. Cox*. ISBN 0-477-06791-3, 7 Apr 1987, 232 pp. \$49.95
- 12 **Pompilidae** (Insecta: Hymenoptera). *A.C. Harris*. ISBN 0-477-02501-3, 13 Nov 1987, 160 pp. \$39.95
- 13 **Encyrtidae** (Insecta: Hymenoptera). *J.S. Noyes*. ISBN 0-477-02517-X, 9 May 1988, 192 pp. \$44.95
- 14 **Lepidoptera** – annotated catalogue, and keys to family-group taxa. *J.S. Dugdale*. ISBN 0-477-02518-8, 23 Sep 1988, 264 pp. \$49.95
- 15 **Ambositrinae** (Insecta: Hymenoptera: Diapriidae). *I.D. Naumann*. ISBN 0-477-02535-8, 30 Dec 1988, 168 pp. \$39.95
- 16 **Nepticulidae** (Insecta: Lepidoptera). *Hans Donner & Christopher Wilkinson*. ISBN 0-477-02538-2, 28 Apr 1989, 92 pp. \$22.95
- 17 **Mymaridae** (Insecta: Hymenoptera) – introduction, and review of genera. *J.S. Noyes & E.W. Valentine*. ISBN 0-477-02542-0, 28 Apr 1989, 100 pp. ... \$24.95
- 18 **Chalcidoidea** (Insecta: Hymenoptera) – introduction, and review of genera in smaller families. *J.S. Noyes & E.W. Valentine*. ISBN 0-477-02545-5, 2 Aug 1989, 96 pp. \$24.95
- 19 **Mantodea** (Insecta), with a review of aspects of functional morphology and biology. *G.W. Ramsay*. ISBN 0-477-02581-1, 13 Jun 1990, 96 pp. \$24.95
- 20 **Bibionidae** (Insecta: Diptera). *Roy A. Harrison*. ISBN 0-477-02595-1, 13 Nov 1990, 28 pp. \$14.95
- 21 **Margarodidae** (Insecta: Hemiptera). *C.F. Morales*. ISBN 0-477-02607-9, 27 May 1991, 124 pp. \$34.95
- 22 **Notonemouridae** (Insecta: Plecoptera). *I.D. McLellan*. ISBN 0-477-02518-8, 27 May 1991, 64 pp. \$24.95
- 23 **Sciapodinae, Medeterinae** (Insecta: Diptera) with a generic review of the Dolichopodidae. *D.J. Bickel*. ISBN 0-477-02627-3, 13 Jan 1992, 74 pp. \$27.95
- 24 **Therevidae** (Insecta: Diptera). *L. Lyneborg*. ISBN 0-477-02632-X, 4 Mar 1992, 140 pp. \$34.95
- 25 **Cercopidae** (Insecta: Homoptera). *K.G.A. Hamilton & C.F. Morales*. ISBN 0-477-02636-2, 25 May 1992, 40 pp. \$17.95
- 26 **Tenebrionidae** (Insecta: Coleoptera): catalogue of types and keys to taxa. *J.C. Watt*. ISBN 0-477-02639-7, 13 Jul 1992, 70 pp. \$27.95
- 27 **Antarctoperlinae** (Insecta: Plecoptera). *I.D. McLellan*. ISBN 0-477-01644-8, 18 Feb 1993, 70 pp. \$27.95
- 28 **Larvae of Curculionoidea** (Insecta: Coleoptera): a systematic overview. *Brenda M. May*. ISBN 0-478-04505-0, 14 Jun 1993, 226 pp. \$55.00
- 29 **Cryptorhynchinae** (Insecta: Coleoptera: Curculionidae). *C.H.C. Lyal*. ISBN 0-478-04518-2, 2 Dec 1993, 308 pp. \$65.00
- 30 **Hepialidae** (Insecta: Lepidoptera). *J.S. Dugdale*. ISBN 0-478-04524-7, 1 Mar 1994, 164 pp. \$42.50
- 31 **Talitridae** (Crustacea: Amphipoda). *K.W. Duncan*. ISBN 0-478-04533-6, 7 Oct 1994, 128 pp. \$36.00
- 32 **Sphecidae** (Insecta: Hymenoptera). *A.C. Harris*. ISBN 0-478-04534-4, 7 Oct 1994, 112 pp. \$33.50
- 33 **Moranilini** (Insecta: Hymenoptera). *J.A. Berry*. ISBN 0-478-04538-7, 8 May 1995, 82 pp. \$29.95
- 34 **Anthicidae** (Insecta: Coleoptera). *F.G. Werner & D.S. Chandler*. ISBN 0-478-04547-6, 21 Jun 1995, 64 pp. \$26.50
- 35 **Cydnidae, Acanthosomatidae, and Pentatomidae** (Insecta: Heteroptera): systematics, geographical distribution, and bioecology. *M.-C. Larièvre*. ISBN 0-478-09301-2, 23 Nov 1995, 112 pp. \$42.50
- 36 **Leptophlebiidae** (Insecta: Ephemeroptera). *D.R. Towns & W.L. Peters*. ISBN 0-478-09303-9, 19 Aug 1996, 144 pp. \$39.50
- 37 **Coleoptera**: family-group review and keys to identification. *J. Klimaszewski & J.C. Watt*. ISBN 0-478-09312-8, 13 Aug 1997, 199 pp. \$49.50
- 38 **Naturalised terrestrial Stylommatophora** (Mollusca: Gastropoda). *G.M. Barker*. ISBN 0-478-09322-5, 25 Jan 1999, 253 pp. \$72.50

- 39 Molytini** (Insecta: Coleoptera: Curculionidae: Molytinae). *R.C. Craw*. ISBN 0-478-09325-X, 4 Feb 1999, 68 pp. \$29.50
- 40 Cixiidae** (Insecta: Hemiptera: Auchenorrhyncha). *M.-C. Larivière*. ISBN 0-478-09334-9, 12 Nov 1999, 93 pp. \$37.50
- 41 Coccidae** (Insecta: Hemiptera: Coccoidea). *C.J. Hodgson & R.C. Henderson*. ISBN 0-478-09335-7, 23 Feb 2000, 264 pp. \$72.50
- 42 Aphodiinae** (Insecta: Coleoptera: Scarabaeidae). *Z. T. Stebnicka*. ISBN 0-478-09341-1, 15 Jun 2001, 64 pp. \$29.50
- 43 Carabidae** (Insecta: Coleoptera): catalogue. *A. Larochele & M.-C. Larivière*. ISBN 0-478-09342-X, 15 Jun 2001, 285 pp. \$72.50
- 44 Lycosidae** (Arachnida: Araneae). *C.J. Vink*. ISBN 0-478-09347-0, 23 Dec 2002, 94 pp. \$37.50
- 45 Nemonychidae, Belidae, Brentidae** (Insecta: Coleoptera: Curculionoidea). *G. Kuschel*. ISBN 0-478-09348-9, 28 Apr 2003, 100 pp. \$40.00
- 46 Nesameletidae** (Insecta: Ephemeroptera). *T.R. Hitchings & A.H. Staniczek*. ISBN 0-478-09349-7, 14 May 2003, 72 pp. \$32.50
- 47 Erotylidae** (Insecta: Coleoptera: Cucujoidea): phylogeny and review. *R.A.B. Leschen*. ISBN 0-478-09350-0, 5 June 2003, 108 pp. \$42.50
- 48 Scaphidiinae** (Insecta: Coleoptera: Staphylinidae). *I. Löbl & R.A.B. Leschen*. ISBN 0-478-09353-5, 18 Nov 2003, 94 pp. \$37.50
- 49 Lithinini** (Insecta: Lepidoptera: Geometridae: Ennominae). *J.D. Weintraub & M.J. Scoble*. ISBN 0-478-09357-8, 29 Apr 2004, 48 pp. \$24.50
- 50 Heteroptera** (Insecta: Hemiptera): catalogue. *M.-C. Larivière & A. Larochele*. ISBN 0-478-09358-6, 14 May 2004, 330 pp. \$89.00
- 51 Coccidae** (Insecta: Hemiptera: Coccoidea): adult males, pupae and prepupae of indigenous species. *C.J. Hodgson & R.C. Henderson*. ISBN 0-478-09360-8, 22 June 2004, 228 pp. \$65.00
- 52 Raphignathoidea** (Acari: Prostigmata). *Qing-Hai Fan & Zhi-Qiang Zhang*. ISBN 0-478-09371-3, 20 May 2005, 400 pp. \$89.00
- 53 Harpalini** (Insecta: Coleoptera: Carabidae: Harpalinae). *A. Larochele & M.-C. Larivière*. ISBN 0-478-09369-1, 4 July 2005, 160 pp. \$55.00
- 54 Hierodoris** (Insecta: Lepidoptera: Gelechoidea: Oecophoridae), and overview of Oecophoridae. *Robert J. B. Hoare*. ISBN 0-478-09378-0, 24 December 2005, 100 pp. \$40.00
- 55 Criconematina** (Nematoda: Tylenchida). *W. M. Wouts*. ISBN 0-478-09381-0, 24 March 2006, 232 pp. \$65.00
- 56 Tyrophagus** (Acari: Astigmata: Acaridae). *Qing-Hai Fan & Zhi-Qiang Zhang*. ISBN 978-0-478-09386-5, 4 June 2007, 291 pp. \$80.00
- 57 Apoidea** (Insecta: Hymenoptera). *B. J. Donovan*. ISBN 978-0-478-09389-6, 7 September 2007, 295 pp. \$89.00
- 58 Alysiinae** (Insecta: Hymenoptera: Braconidae). *J. A. Berry*. ISBN 978-0-478-09390-2, 7 September 2007, 95 pp. \$45.00
- 59 Erotylinae** (Insecta: Coleoptera: Cucujoidea: Erotylidae): taxonomy and biogeography. *Paul E. Skelley & Richard A. B. Leschen*. ISBN 978-0-478-09391-9, 7 September 2007, 59 pp. \$30.00
- 60 Carabidae** (Insecta: Coleoptera): synopsis of supraspecific taxa. *A. Larochele & M.-C. Larivière*. ISBN 978-0-478-09394-0, 21 November 2007, 188 pp. \$54.00
- 61 Lucanidae** (Insecta: Coleoptera). *B. A. Holloway*. ISBN 978-0-478-09395-7, 21 November 2007, 254 pp. \$75.00
- 62 Trechini** (Insecta: Coleoptera: Carabidae: Trechinae). *J. I. Townsend*. ISBN 978-0-478-34717-9 (print), 978-0-478-34716-6 (online), 16 June 2010, 101 pp. \$49.50
- 63 Auchenorrhyncha** (Insecta: Hemiptera): catalogue. *M.-C. Larivière, M. J. Fletcher & A. Larochele*. ISBN 978-0-478-34720-3 (print), 978-0-478-34721-0 (online), 16 June 2010, 232 pp. \$75.00

Visit the Manaaki Whenua Press Website at:

<http://www.mwpress.co.nz/>

for further information.

To access on-line extracts and medium-resolution pdfs from this series visit:

<http://fnz.landcareresearch.co.nz/>

Taxonomic groups covered in the *Fauna of New Zealand series*

Insecta

Coleoptera

- Family-group review and keys to identification (*J. Klimaszewski & J.C. Watt*, FNZ 37, 1997)
- Anthribidae (*B.A. Holloway*, FNZ 3, 1982)
- Anthridae (*F.G. Werner & D.S. Chandler*, FNZ 34, 1995)
- Carabidae: catalogue (*A. Laroche & M.-C. Larivière*, FNZ 43, 2001); synopsis of supraspecific taxa (*A. Laroche & M.-C. Larivière*, FNZ 60, 2007)
- Carabidae: Harpalinae: Harpalini (*A. Laroche & M.-C. Larivière*, FNZ 53, 2005)
- Carabidae: Trechinae: Trechini (*J. I. Townsend*, FNZ 62, 2010)
- Curculionidae: Cryptorhynchinae (*C.H.C. Lyal*, FNZ 29, 1993)
- Curculionidae: Molytinae: Molytini (*R. C. Craw*, FNZ 39, 1999)
- Curculionoidea: Nemonychidae, Belidae, Brentidae (*G. Kuschel*, FNZ 45, 2003)
- Curculionoidea larvae: a systematic overview (*Brenda M. May*, FNZ 28, 1993)
- Erotylidae: phylogeny and review (*Richard A. B. Leschen*, FNZ 47, 2003); Erotylinae: taxonomy and biogeography (*Paul E. Skelley & Richard A. B. Leschen*, FNZ 59, 2007)
- Hydraenidae (*R.G. Ordish*, FNZ 6, 1984)
- Lucanidae (*B.A. Holloway*, FNZ 61, 2007)
- Scarabaeidae: Aphodiinae (*Z. T. Stebnicka*, FNZ 42, 2001)
- Staphylinidae: Osoriinae (*H. Pauline McColl*, FNZ 2, 1982)
- Staphylinidae: Scaphidiinae (*I. Löbl & Richard A. B. Leschen*, FNZ 48, 2003)
- Tenebrionidae: catalogue of types and keys to taxa (*J.C. Watt*, FNZ 26, 1992)

Diptera

- Bibionidae (*Roy A. Harrison*, FNZ 20, 1990)
- Calliphoridae (*James P. Dear*, FNZ 8, 1986)
- Dolichopodidae: Sciapodinae, Medeterinae with a generic review (*D.J. Bickel*, FNZ 23, 1992)
- Therevidae (*L. Lyneborg*, FNZ 24, 1992)

Ephemeroptera

- Leptophlebiidae (*D.R. Towns & W.L. Peters*, FNZ 36, 1996)
- Nesameletidae (*Terry R. Hitchings & Arnold H. Staniczek*, FNZ 46, 2003)

Hemiptera

- Auchenorrhyncha: catalogue (*M.-C. Larivière, M. J. Fletcher & A. Laroche*, FNZ 63, 2010)
- Cercopidae (*K.G.A. Hamilton & C.F. Morales*, FNZ 25, 1992)
- Cixiidae (*M.-C. Larivière*, FNZ 40, 1999)
- Coccidae (*C. J. Hodgson & R. C. Henderson*, FNZ 41, 2000); adult males, pupae and prepupae of indigenous species (*C. J. Hodgson & R. C. Henderson*, FNZ 51, 2004)
- Cydnidae, Acanthosomatidae, and Pentatomidae (*M.-C. Larivière*, FNZ 35, 1995)
- Heteroptera: catalogue (*M.-C. Larivière & A. Laroche*, FNZ 50, 2004)
- Margarodidae (*C.F. Morales*, FNZ 21, 1991)
- Pseudococcidae (*J.M. Cox*, FNZ 11, 1987)

Hymenoptera

- Apoidea (*B. J. Donovan*, FNZ 57, 2007)
- Braconidae: Alysiinae (*J. A. Berry*, FNZ 58, 2007)
- Chalcidoidea: introduction, and review of smaller families (*J.S. Noyes & E.W. Valentine*, FNZ 18, 1989)
- Diapriidae: Ambositrinae (*I.D. Naumann*, FNZ 15, 1988)
- Encyrtidae (*J.S. Noyes*, FNZ 13, 1988)
- Mymaridae (*J.S. Noyes & E.W. Valentine*, FNZ 17, 1989)
- Pompilidae (*A.C. Harris*, FNZ 12, 1987)
- Pteromalidae: Eunotinae: Moranilini (*J.A. Berry*, FNZ 33, 1995)
- Sphecidae (*A.C. Harris*, FNZ 32, 1994)

Lepidoptera

- Annotated catalogue, and keys to family-group taxa (*J. S. Dugdale*, FNZ 14, 1988)
- Geometridae: Ennominae: Lithinini (*Jason D. Weintraub & Malcolm J. Scoble*, FNZ 49, 2004)
- Hepialidae (*J.S. Dugdale*, FNZ 30, 1994)
- Nepticulidae (*Hans Donner & Christopher Wilkinson*, FNZ 16, 1989)
- Oecophoridae: *Hierodoris* (*Robert J. B. Hoare*, FNZ 54, 2005).

Mantodea, with a review of aspects of functional morphology and biology (*G.W. Ramsay*, FNZ 19, 1990)

Plecoptera

- Antarctoperlinae (*I.D. McLellan*, FNZ 27, 1993)
- Notonemouridae (*I.D. McLellan*, FNZ 22, 1991)

Protura (*S.L. Tuxen*, FNZ 9, 1986)

Thysanoptera

- Terebrantia (*Laurence A. Mound & Annette K. Walker*, FNZ 1, 1982)
- Tubulifera (*Laurence A. Mound & Annette K. Walker*, FNZ 10, 1986)

Arachnida

Acari

- Acaridae: *Tyrophagus* (*Qing-Hai Fan & Zhi-Qiang Zhang*, FNZ 56, 2007)
- Cryptostigmata – a concise review (*M. Luxton*, FNZ 7, 1985)
- Eriophyoidea except Eriophyinae (*D.C.M. Manson*, FNZ 4, 1984)
- Eriophyinae (*D.C.M. Manson*, FNZ 5, 1984)
- Raphignathoidea (*Qing-Hai Fan & Zhi-Qiang Zhang*, FNZ 52, 2005)

Araneae

- Lycosidae (*C. J. Vink*, FNZ 44, 2002)

Crustacea

Amphipoda

- Talitridae (*K.W. Duncan*, FNZ 31, 1994)

Mollusca

Gastropoda

- Naturalised terrestrial Stylommatophora (*G.M. Barker*, FNZ 38, 1999)

Nematoda

- Tylenchida: Criconematina (*W. M. Wouts*, FNZ 55, 2006)

NOTICES

This series of refereed publications has been established to encourage those with expert knowledge to publish concise yet comprehensive accounts of elements in the New Zealand fauna. The series is professional in its conception and presentation, yet every effort is made to provide resources for identification and information that are accessible to the non-specialist.

Fauna of N.Z. deals with non-marine invertebrates only, since the vertebrates are well documented, and marine forms are covered by the series *Marine Fauna of N.Z.*

Contributions are invited from any person with the requisite specialist skills and resources. Material from the N.Z. Arthropod Collection is available for study.

Contributors should discuss their intentions with a member of the Editorial Board or with the Series Editor before commencing work; all necessary guidance will be given.

Subscribers should address inquiries to *Fauna of N.Z.*, Manaaki Whenua Press, Landcare Research, P.O. Box 40, Lincoln 8152, New Zealand.

Subscription categories: ‘A’ – standing orders; an invoice will be sent with each new issue, as soon after publication as possible; ‘B’ – promotional fliers with order forms will be sent from time to time.

Retail prices (see ‘Titles in print’, page 230) include packaging and surface postage. Subscribers in New Zealand and Australia pay the indicated amount in \$NZ; GST is included in the price. Other subscribers pay the listed price in \$US, or its equivalent.

Back issues of all numbers are available, and new subscribers wishing to obtain a full set or a selection may request a discount. Booksellers and subscription agents are offered a trade discount of ten percent.

NGĀ PĀNUI

Kua whakatūria tēnei huinga pukapuka hei whakahaui i ngā tohunga whai mātauranga kia whakaputa i ngā kōrero poto, engari he whaikiko tonu, e pā ana ki ngā aitanga pepeke o Aotearoa. He tōtika tonu te āhua o ngā tuhituhi, engari ko te tino whāinga, kia mārara me te marea ki ngā tohu tautuhi o ia ngārara, o ia ngārara, me te roanga atu o ngā kōrero mō tēnā, mō tēnā.

He tiro whāiti tā tēnei pukapuka ki ngā mea noho whenua, kāore he tuarā; i pēnei ai i te mea kei te mōhio whānuitia ngā mea whai tuarā, ā, ko ngā mea noho moana, koirā te tino kaupapa o te huinga pukapuka *Marine Fauna of N.Z.*

Ka āhei te tangata ki te **whakauru tuhituhinga** mehemea kei a ia ngā tohungatanga me ngā rauemi e tutuki pai ai tana mahi. Heoi anō, e wātea ana te Kohinga Angawaho o Aotearoa hei āta tiro tiro mā te tangata mehemea he āwhina kei reira.

Me whāki te kaituhi i ōna whakaaro ki tētahi o te Kāhui Ārahi Whakarōpūtanga Tuarā-Kore, ki te ġtita rānei i mua i te tīmatanga, ā, mā rātou a ia e ārahi mō te wāhi ki tana tuhinga.

Ko te hunga pīrangi **hoko pukapuka**, me tuhi ki *Fauna of N.Z.*, Manaaki Whenua Press, Manaaki Whenua, Pouaka Poutāpetā 40, Lincoln 8152, Aotearoa.

E rua ngā tūmomo kaihoko: “A” – kaihoko tūmāu, ka tukua ia pukapuka, ia pukapuka, me te nama, i muri tonu i te tānga; “B” – ka tukua ngā pānui whakatairanga me ngā puka tono i ōna wā anō.

Te utu (tirohia “Titles in print”, whārangi 230). Ko te kōpaki me te pane kuini kei roto i te utu. Me utu te hunga e noho ana i Aotearoa me Ahitereiria ki ngā tāra o Aotearoa. Ko ētahi atu me utu te moni kua tohua, ki ngā tāra Merikana, ki te nui o te moni rānei e rite ana.

E toe ana he pukapuka o ngā putanga katoa o mua. Mehemea e hiahia ana koe ki te katoa o ngā pukapuka, ki ētahi rānei, tonoa mai kia whakaheke te utu. Tekau ōrau te heke iho o te utu ki ngā toa hoko pukapuka.