Zootaxa 4144 (4): 556–574
http://www.mapress.com/j/zt/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://doi.org/10.11646/zootaxa.4144.4.6
http://zoobank.org/urn:lsid:zoobank.org:pub:7A233965-B615-4AC5-820C-10BF39439C3A

An annotated checklist of the psyllids of New Zealand (Hemiptera: Psylloidea)

FRANCESCO MARTONI[1, 2, 4], DANIEL BURCKHARDT[3] & KAREN ARMSTRONG[1, 2]

[1]*Bio-Protection Research Centre, Lincoln University, Lincoln 7647, New Zealand*
[2]*Plant Biosecurity Cooperative Research Centre, University of Canberra, ACT 2617, Australia*
[3]*Naturhistorisches Museum, Augustinergasse 2, CH-4001 Basel, Switzerland.*
[4]*Corresponding author. E-mail: francesco.martoni@lincolnuni.ac.nz*

Abstract

A checklist of extant species of Psylloidea in New Zealand is presented. The list is structured according to the latest taxonomic classification of families, subfamilies and genera. It includes 99 species, 71 of which are formally described and named, along with information on the host plants and the natural enemies as aspects that are either species-specific or assist in their recognition. An updated distribution of each species is given based on literature records and material held in the major New Zealand entomological collections and databases, including from very recent field surveys. A new record for New Zealand is *Phellopsylla formicosa*.

Key words: jumping plant lice, host plants, natural enemies, distribution, new record

Introduction

The first psyllids from New Zealand were recorded by Maskell (1879, 1880, 1890, 1894), initially describing *Powellia vitreo-radiata* from immatures and then adding the six species *Psylla acaciae* and *Rhinocola eucalypti* (both native to Australia), *Powellia doryphora, R. fuchsiae*, *Trioza panacis* and *T. pellucida*. A decade later Marriner (1903) described *Trioza alexina*. Surprisingly, Hutton's Index Fauna Novae Zealandiae (1904) listed only four species (*R. eucalypti*, *R. fuchsiae*, *T. panacis* and *T. pellucida*), which forced Kirkaldy (1906) to comment on the omission of species from the Index. However, Myers (1922) continued to list only five psyllid species in a review of Hemiptera from New Zealand. Ferris and Klyver (1932) and Tuthill (1952) then revised the New Zealand psyllids to recognise 25 and 51 species respectively, now amongst six genera. Dumbleton (1964, 1967) recorded two further introduced *Psyllopsis* species on ash and described *T. dentiforceps*. To this point, the checklists of New Zealand insects by Wise (1977) and Spiller & Wise (1982) summarise this information.

Subsequently, a significant increase in knowledge is owed to Dale (1985) who contributed a very thorough and detailed field survey and taxonomic study of the New Zealand psyllids. She recognised 81 species including 24 new species and three new genera. Descriptions were provided for the new taxa but they were not formally named. One of them, *Blastopsylla occidentalis*, has been described subsequently by Taylor (1987).

Since Dale's work (1985), the New Zealand Inventory of Biodiversity (Henderson *et al.* 2010) reported 95 species of which 26 are undescribed; although Taylor *et al.* (2010) described one of these as *Casuarinicola australis*. That list included the introduced pest *Bactericera cockerelli* and the intentionally introduced *Arytainilla spartiophila* from Europe as a biological control agent against the weed *Cytisus scoparius*, the common or Scotch broom (Syrett *et al.* 2007). Finally, new introductions have been reported by Taylor and Kent (2013: *Acizzia solanicola*) and Thorpe (NatureWatchNZ 2016: *Mycopsylla* sp.). Here we also report for the first time the occurrence of the Australian species *Phellopsylla formicosa*.

The development herin of an updated checklist has been driven not least by the need to know what species occur in New Zealand such that new introductions can be recognised. This is particularly in light of the arrival of *B. cockerelli* (Teulon *et al.* 2009) which vectors the plant pathogen *Candidatus* Liberibacter solanacearum. This pathogen has many solanaceous plant hosts but is of significant economic consequence as the cause of the Zebra

 Accepted by D.Ouvrard: 22 Jun. 2016; published: 29 Jul. 2016

chip disease in potatoes (Liefting *et al.* 2009). Another recent arrival is the pest species *A. solanicola*, which causes 'psyllid yellows' in eggplants, *Solanum melongena* (Solanaceae) (Kent & Taylor 2010; Taylor & Kent 2013). Advent of these species demonstrates an ongoing vulnerability to new invasions, despite the explicit biosecurity measures of New Zealand that generally serve well to minimise exotic species introduction.

Checklist

A total of 99 species of Psylloidea are listed here as occuring in New Zealand. This includes 25 species by Dale (1985) which are not formally named, as well as two species listed by Henderson *et al*. (2010) and one by Thorpe (2016) which are neither described nor named.

The checklist contains all original (primary) records of psyllids from New Zealand. The mention in secondary sources such as checklists or Psyl'list (Ouvrard 2016) is not automatically repeated here. Species are listed alphabetically using the classification of Burckhardt and Ouvrard (2012).

Comprehensive geographic distribution information has been developed here, drawn from the literature, in particular the work of Dale (1985), the five main entomological collections of New Zealand, the Forest Health Database (FHDB) and the website http://naturewatch.org.nz/. The entomological collections are those from following institutions: the New Zealand Arthropod Collection (NZAC; containing the specimens collected and identified by P. J. Dale), the Lincoln University Entomology Research Collection (LUNZ), the Canterbury Museum (CMNZ), the Museum of New Zealand (MONZ) and the Auckland Museum (AMNZ). The LUNZ includes psyllids collected and identified in the last two years from almost 500 locations around New Zealand and adds significantly to information on current distributions. The FHDB includes more than a thousand records, several hundred of which are identified to species. From the NatureWatchNZ website only observations marked as 'quality grade research' have been considered; these comprise pictures, GPS coordinates, information about the host plant and name of the identifier. Distributions across New Zealand are provided using the regional labels of Crosby *et al*. (1998) (Figs 1, 2).

Information on host plants and natural enemies (parasitoids, predators) of a species is only given for records in New Zealand. A summary of the host associations for the six psyllid families and 24 genera reported in New Zealand are listed in Table 1. The nomenclature of host plants, as defined by Burckhardt *et al*. (2014), follows The Plant List (2016) and, for the families, the Angiosperm Phylogeny Website (2016). For introduced psyllids only the host species from New Zealand are listed. Additional information on the general distribution and host plants can be found in Psyl'list (Ouvrard 2016).

Aphalaridae

Rhinocolinae

Anomalopsylla insignita Tuthill, 1952
Distribution: New Zealand: AK, BR, NC, SL, WN (Dale 1985), MC (LUNZ), NN (Tuthill 1952, Dale 1985).
Host plants: *Olearia albida*, *O. avicenniifolia*, *O. nummulariifolia*, *O. paniculata* (Asteraceae).

Anomalopsylla sp.
Distribution: New Zealand: AK (Dale 1985, as *Anomalopsylla* n. sp. 'Pollen Island').
Host plants: *Olearia solandri* (Asteraceae).

Anomalopsylla sp.
Distribution: New Zealand: SD (Dale 1985, as *Anomalopsylla* n. sp. 'Port Underwood').
Host plants: *Olearia solandri* (Asteraceae).
Comments: This species is listed as a threatened species in New Zealand (Stringer *et al.* 2012).

Spondyliaspidinae

Anoeconeossa communis Taylor, 1987
Distribution: Australia; introduced into New Zealand: (Henderson *et al.* 2010).
Host plants: *Eucalyptus* sp. (Myrtaceae).
Natural enemies: *Psyllaephagus richardhenryi* (Hymenoptera: Encyrtidae) (Macfarlane *et al.* 2010).

Blastopsylla occidentalis Taylor, 1985
Distribution: Australia; introduced into Africa, North and South America, Asia, Europe and New Zealand: AK (Taylor 1985; Dale 1985, as 'genus C' n. sp.), BP, ND, NN (Dale 1985, as 'genus C' n. sp.).
Host plants: *Eucalyptus leucoxylon*, *E. maideni, E. nicholii*, *E. viridis* (Myrtaceae).

Cardiaspina fiscella Taylor, 1962
Distribution: Australia; introduced into New Zealand: (Henderson *et al.* 2010); AK, BP, CL, GB, HB, ND, RI, TK, WA, WI, WN, WO (AMNZ, MONZ, FHDB).
Host plants: *Eucalyptus* sp. (Myrtaceae).
Natural enemies: *Coccidoctonus gemitus, Psyllaephagus gemitus* (Hymenoptera: Encyrtidae) (Macfarlane *et al.* 2010).

Creiis lituratus (Froggatt, 1900)
Distribution: Australia; introduced into New Zealand: (Henderson *et al.* 2010, as *Creiis liturata* [sic]); AK (AMNZ, FHDB), BP, CL, GB, ND, WI, WO (FHDB).
Host plants: *Eucalyptus* sp. (Myrtaceae). In Australia on *Eucalyptus robusta* (Hollis 2004).

Cryptoneossa triangula Taylor, 1990
Distribution: Australia; introduced into USA and New Zealand: (Henderson *et al.* 2010); AK, BP, HB, ND (AMNZ, FHDB, MONZ).
Host plants: *Eucalyptus citriodora, E. maculata* (Myrtaceae).

Ctenarytaina clavata Ferris & Klyver, 1932
Distribution: New Zealand: (Tuthill 1952), AK, BP, BR, NC, ND, NN, TO, WI (Dale 1985), WN (Ferris & Klyver 1932; Dale 1985); MC (LUNZ).
Host plants: *Leptospermum scoparium* (Myrtaceae).
Comments: Tuthill (1952) 'found this minute species to be present on both *Leptospermum scoparium* and *L. ericoides* [=*Kunzea ericoides*] at many localities throughout New Zealand'. Judging from the host plants he collected from, Tuthill's (1952) record is a mix of *C. clavata* and *C. pollicaris* (Dale 1985).

Ctenarytaina eucalypti (Maskell, 1890)
Distribution: Australia; introduced into Africa, America (North and South), Asia, Europe and New Zealand: (Maskell 1890; Myers 1922; Clark 1938, all as *Rhinocola eucalypti*; Miller 1971), BP, MC (Tuthill 1952), WI (Tuthill 1952; Dale 1985); AK, BR, CL, DN, GB, HB, MB, NC, ND, NN, SC, SL, TK, TO, WD, WO, WN (FHDB, LUNZ).
Host plants: *Eucalyptus globulus* (Myrtaceae). In Australia on several *Eucalyptus* spp. (Hollis 2004).
Natural enemies: *Psyllaephagus pilosus* Noyes, 1988 (Hymenoptera: Encyrtidae) (Macfarlane *et al.* 2010).

Ctenarytaina fuchsiae (Maskell, 1890)
Distribution: New Zealand: (Maskell 1889, as *Rhinocola fuchsiae*; Tuthill 1952), AK (Dale 1985), MC (Ferris & Klyver 1932), NN, TK, TO, WD (Dale 1985), WN (Ferris & Klyver 1932; Dale 1985); RI, SI (CMNZ, LUNZ).
Host plants: *Fuchsia excorticata* (Onagraceae).

Ctenarytaina longicauda (Taylor, 1987)
Distribution: Australia; introduced into the USA and New Zealand: (Henderson *et al.* 2010), AK (AMNZ, FHDB, LUNZ).
Host plants: *Lophostemon confertus* (Myrtaceae). In Australia on *Lophostemon suaveolens* (Hollis 2004).

Ctenarytaina pollicaris (Ferris & Klyver, 1932)
Distribution: New Zealand: AK, BP, BR, MB (Dale 1985), MC (Tuthill 1952; Dale 1985), ND, NN (Dale 1985), WI (Ferris & Klyver 1932; Tuthill 1952; Dale 1985), WN (Ferris & Klyver 1932; Dale 1985).
Host plants: *Kunzea ericoides* (Myrtaceae).

Ctenarytaina spatulata Taylor, 1997
Distribution: Australia; introduced into America (North and South), Europe and New Zealand: (Henderson *et al.* 2010), South Island (Taylor 1997), MC (Bullians 2015); AK, BP, DN, FD, HB, NC, ND, RI, SI, SL, WN (FHDB, LUNZ).
Host plants: *Eucalyptus* sp. (Myrtaceae). In Australia on several *Eucalyptus* spp. (Hollis 2004).

Ctenarytaina thysanura Ferris & Klyver, 1932
Distribution: Australia and New Zealand: (Tuthill 1952), AK, WI (Dale 1985), DN (introduced from Australia: Melbourne, Ferris & Klyver 1932; Dale 1985); SC, TO, WN (FHDB, LUNZ).
Host plants: *Boronia heterophylla*, *B. megastigma* (Rutaceae).

Ctenarytaina sp.
Distribution: New Zealand: AK, BP, ND, NN, WN (Dale 1985, as *Ctenarytaina* n. sp. 'cutaway').
Host plants: *Kunzea ericoides* (Myrtaceae).
Comments: When Dale (1985) described this species, she listed *Leptospermum ericoides* as the only host plant. However, a revision of the *Leptospermum* genus had already been made (Thompson 1983) with *L. ericoides* transferred to *Kunzea* as *K. ericoides*. Therefore it is now listed here as such. Henderson *et al.* (2010) listed two *Ctenarytaina* spp. both with *Leptospermum* as host plant, but not specifying the species; this probably referred to Dale's work without the updated plant classification.

Ctenarytaina sp.
Distribution: New Zealand: BR, MB, MC, NN, WN (Dale 1985, as *Ctenarytaina* n. sp. 'short').
Host plants: *Kunzea ericoides* (Myrtaceae).
Comments: When Dale (1985) described this species, she listed *Leptospermum ericoides* as the only host plant. However, a revision of the *Leptospermum* genus had already been made (Thompson 1983) with *L. ericoides* transferred to *Kunzea* as *K. ericoides*. Therefore it is now listed here as such. Henderson *et al.* (2010) listed two *Ctenarytaina* spp. both with *Leptospermum* as host plant, but not specifying the species; this probably referred to Dale's work without the updated plant classification.

Ctenarytaina sp.
Distribution: Australia; introduced into New Zealand: (Henderson *et al.* 2010).
Host plants: *Syzygium* sp. (Myrtaceae).

Eucalyptolyma maideni Froggatt, 1901
Distribution: Australia; introduced into USA and New Zealand: (Henderson *et al.* 2010), AK, BP, MC (AMNZ, FHDB).
Host plants: *Eucalyptus* sp. (Myrtaceae). In Australia on several *Eucalyptus* spp. (Hollis 2004).

Glycaspis granulata (Froggatt, 1901)
Distribution: Australia; introduced into New Zealand: (Henderson *et al.* 2010), AK (LUNZ; AMNZ; FHDB), BP, CL (AMNZ; FHDB), GB, HB, KA, ND, NN, TK, WA, WI, WN, WO (FHDB).
Host plants: *Eucalyptus* sp. (Myrtaceae). In Australia on several *Eucalyptus* spp. (Hollis 2004).

Phellopsylla formicosa (Froggatt, 1900)
Distribution: Australia: introduced into New Zealand: AK (AMNZ).
Host plants: *Eucalyptus saligna* (Myrtaceae). In Australia on *Eucalyptus piperita* (Hollis 2004).
Comments: This species is recorded here for the first time from New Zealand: NZAC (2015).

Calophyidae

Atmetocraniinae

Atmetocranium myersi (Ferris & Klyver, 1932)
Distribution: Australia and New Zealand: BP (Dale 1985; Tuthill 1952), FD, NN (Dale 1985), SI (Tuthill 1952; Dale 1985), SL (Tuthill 1952), TO (Tuthill 1952; Dale 1985), WN (Ferris & Klyver 1932, as *Pauropsylla myersi*; Dale 1985); BR (CMNZ), CL (AMNZ), WD (FHDB).
Host plants: *Weinmannia racemosa* (Cunoniaceae).

Calophyinae

Calophya schini Tuthill, 1959
Distribution: Bolivia, Peru; introduced into Argentina, Chile, Colombia, Africa, North America, Europe and New Zealand: AK (Burckhardt & Basset 2000), MC (Anonymous, 2011); BP, HB, MB, ND, NN, WA, WI, WN (FHDB).
Host plants: *Schinus molle* (Anacardiaceae).

Liviidae

Euphyllurinae

'*Gyropsylla*' *zealandica* (Ferris & Klyver, 1932)
Distribution: New Zealand: FD, NC (Ferris & Klyver 1932, as *Metaphalara zealandica*; Dale 1985, as 'Genus A' *zealandica*), NN, SI, SL, WD (Dale 1985, as 'Genus A' *zealandica*).
Host plants: Unknown.
Comments: When describing *Metaphalara zealandica* Ferris & Klyver (1932) pointed out taxonomically its 'doubtful position', but did not provide reasons for including it in the New World genus *Metaphalara*. Tuthill (1952) cited the species under *Gyropsylla*, a senior synonym of *Metaphalara*. After examining the type species of *Gyropsylla,* Dale (1985) concluded that it was not congeneric with *G. zealandica,* which is related to *Psyllopsis,* and instead represented an undescribed genus in the 'Diaphorininae' (= Diaphorinini sensu Burckhardt & Ouvrard 2012). This classification was followed by subsequent authors (Burckhardt 1986, 1987; Brown & Hodkinson 1988).

Psyllopsis fraxini (Linnaeus, 1758)
Distribution: Asia, Europe; introduced into North America, Australia and New Zealand: AK, SL (Dale 1985), MC (Dumbleton 1964; Dale 1985); SC (FHDB).
Host plants: *Fraxinus excelsior* (Oleaceae). In the Palaearctic on several *Fraxinus* spp. (Ossiannilsson, 1992).
Natural enemies: *Ausejanus albisignatus* (Knight, 1938) (Hemiptera: Miridae) (Macfarlane *et al.* 2010).

Psyllopsis fraxinicola (Foerster, 1848)
Distribution: North Africa, Asia, Europe; introduced into North and South America, Australia and New Zealand: MC (Dumbleton 1964; Dale 1985), WI (Dale 1985); CO, SC, TK, WN, WO (FHDB).
Host plants: *Fraxinus excelsior* (Oleaceae). In the Palaearctic on several *Fraxinus* spp. (Ossiannilsson, 1992).
Natural enemies: *Ausejanus albisignatus* (Knight, 1938) (Hemiptera: Miridae) (Macfarlane *et al.* 2010).

Homotomidae

Macrohomotominae

Mycopsylla fici (Tryon, 1895)
Distribution: Australia, New Guinea; introduced into New Zealand: (Henderson *et al.* 2010); AK (AMNZ, LUNZ).
Host plants: *Ficus macrophylla* (Moraceae).

Mycopsylla sp.
Distribution: probably Autralia; introduced into New Zealand: AK (Thorpe, 2016).
Host plants: *Ficus rubiginosa* (Moraceae).
Comments: From the photographs provided by Thorpe (2016) this appears to be an undescribed species probably introduced from Australia along with its host.

Psyllidae

Acizziinae

Acizzia acaciae (Maskell, 1894)
Distribution: Australia; introduced into New Zealand: AK (Ferris & Klyver 1932, as *Psylliae* [sic] *acaciae*), BP (Tuthill 1952, as *Psylla* (*Acizzia*) *acaciae*; Dale 1985), MB, ND, SC, WI (Dale 1985), NN (Tuthill 1952, as *Psylla* (*Acizzia*) *acaciae*), WN (Maskell 1894, as *Psylla acaciae*; Ferris & Klyver 1932, as *Psylliae* [sic] *acaciae*); BR, CL, GB, HB, MC, RI, SD, TO (FHDB).
Host plants: *Acacia melanoxylon* (Fabaceae).
Natural enemies: *Adalia bipuncatata* (Linnaeus, 1758), *Cleobora mellyi* (Mulsant, 1850), *Halmus chalybeus* (Boisduval, 1835), *Harmonia conformis* (Boisduval, 1835), *Drepanacra binocula* (Newman, 1838) (Coleoptera: Coccinellidae) (Macfarlane *et al.* 2010).

Acizzia acaciaebaileyanae (Froggatt, 1901)
Distribution: Australia, Philippines, introduced in South Africa, Europe, USA and New Zealand: AK (Dale 1985), MC (Ferris & Klyver 1932, as *Psyllia uncata*; Tuthill 1952, as *Psylla* (*Acizzia*) *acaciae-baileyanae* [sic]; Dale 1985), WI, (Tuthill 1952, as *Psylla* (*Acizzia*) *acaciae-baileyanae* [sic]; Dale 1985); NN, TO, WN, WO (FHDB).
Host plants: *Acacia baileyana*, *A. podalyriifolia* (Fabaceae).
Natural enemies: *Psyllaephagus acaciae* Noyes, 1988 (Hymenoptera: Encyrtidae); *Cleobora mellyi* (Mulsant, 1850) (Coleoptera: Coccinellidae) (Macfarlane *et al.* 2010).

Acizzia albizziae (Ferris & Klyver, 1932)
Distribution: Australia; introduced into New Zealand: (Tuthill 1952, as *Psylla* (*Acizzia*) *albizziae*), MC (Ferris & Klyver 1932, as *Psyllia albizziae*; Dale 1985), NN, SD, WI (Dale 1985).
Host plants: *Acacia dealbata, A. decurrens, A. mearnsii* (Fabaceae). Ferris & Klyver (1932) reported adults and immatures from *Albizia lophantha* (Fabaceae) but neither Tuthill (1952) nor Dale (1985) found any material on this species making this record doubtful.
Natural enemies: *Drepanacra binocula* (Newman, 1838) (Neuroptera: Hemerobiidae) (Macfarlane *et al.* 2010).

Acizzia conspicua Tuthill, 1952
Distribution: Australia; introduced into New Zealand: AK, HB, NN, WI (Dale 1985), ND (Tuthill 1952, as *Psylla* (*Acizzia*) *conspicua*; Dale 1985); GB, TO (FHDB).
Host plants: *Acacia longifolia* (Fabaceae). Tuthill (1952) listed *A. melanoxylon* as host but Dale (1985) never found it on that plant. Hollis (2004) listed for Australia also *A. dealbata* and *A. melanoxylon*.

Acizzia dodonaeae Tuthill, 1952

Distribution: Australia; introduced into New Zealand: AK, NC, ND, WN (Dale 1985), BP (Tuthill 1952, as *Psylla* (*Acizzia*) *dodonaeae*; Dale 1985), NN (Tuthill 1952, as *Psylla* (*Acizzia*) *dodonaeae*); HB, MC, SL, TK (FHDB).

Host plants: *Dodonaea viscosa* (Sapindaceae).

Acizzia exquisita Tuthill, 1952

Distribution: Australia; introduced into New Zealand: AK (Tuthill 1952, as *Psylla* (*Acizzia*) *exquisita*; Dale 1985), ND, WI (Dale 1985).

Host plants: *Acacia decurrens* (Fabaceae). Hollis (2004) listed for SE Australia *A. melanoxylon* and *A. obliquinervia*.

Acizzia hakeae Tuthill, 1952

Distribution: Presumably Australia but as yet undocumented (Percy *et al.* 2012); introduced into USA (California) and New Zealand: AK, ND (Tuthill 1952, as *Psylla* (*Acizzia*) *hakeae*; Dale 1985), BP (Tuthill 1952, as *Psylla* (*Acizzia*) *hakeae*); GB, HB, MC, NN, SD, TK, WA, WI, WN (FHDB).

Host plants: *Hakea acicularis* (Proteaceae). In Australia possibly on *Hakea* spp. (see remarks below) although the native host plant preferences are unknown; in California recorded from *Grevillea* and *Hakea* spp. (Percy *et al.* 2012).

Comments: Tuthill (1952) suggested that the species is 'apparently introduced from Australia' and mentioned that 'Keith L. Taylor of the Division of Entomology [CSIRO], Australia, has taken a closely related species from *Hakea dactyloides* in New South Wales.'

Acizzia jucunda Tuthill, 1952

Distribution: Australia and New Zealand: AK (Tuthill 1952, as *Psylla* (*Acizzia*) *jucunda*; Dale 1985), MC, NN, RI, SC, WO (Dale 1985); BP, ND, SL, WI (FHDB)

Host plants: *Acacia baileyana, A. dealbata, A. decurrens, A. mearnsii* (Fabaceae).

Acizzia solanicola Kent & Taylor, 2010

Distribution: Australia; introduced into New Zealand: AK (Kent & Taylor 2010).

Host plants: *Brugmansia* sp., *Physalis peruviana, Solanum mauritianum, S. melongea, S. petrophilum* (Solanaceae).

Acizzia uncatoides (Ferris & Klyver, 1932)

Distribution: Australia; introduced in Chile, Colombia, Europe, Guadeloupe, Mexico, USA and New Zealand: AK, HB, WD (Dale 1985), BP, ND, TK, WI (Tuthill 1952, as *Psylla* (*Acizzia*) *uncatoides*; Dale 1985), NN (Ferris & Klyver 1932, as *Psyllia uncatoides*; Dale 1985); TO, WO (FHDB)

Host plants: *Acacia* and *Albizia* spp. (Fabaceae).

Natural enemies: *Adalia bipuncatata* (Linnaeus, 1758), *Cleobora mellyi* (Mulsant, 1850), *Halmus chalybeus* (Boisduval, 1835) and *Harmonia conformis* (Boisduval, 1835) (Coleoptera: Coccinellidae); *Drepanacra binocula* (Newman, 1838) (Neuroptera: Hemerobiidae) (Macfarlane *et al.* 2012).

Acizzia sp.

Distribution: Probably Australia from where it, however, has not been reported yet; introduced into New Zealand: AK (Dale 1985, as n. sp. "Waitakere").

Host plants: *Acacia mearnsii* (Fabaceae).

Psyllinae

Arytainilla spartiophila (Foerster, 1848)

Distribution: Europe; introduced as bio-control agent into Australia, USA and New Zealand: BP, CO, DN, FD, HB, KA, MC, MK, NC, NN, RI, SC, SL, WA, WI, WO (Syrett *et al.* 2007); TO (FHDB).

Host plants: *Cytisus scoparius* (Fabaceae).

Baeopelma foersteri (Flor, 1861)

Distribution: Europe, Northern Africa, Middle East; introduced into New Zealand: AK, WI (Dale 1985, as *Psylla foersteri*).

Host plants: *Alnus glutinosa, A. incana* (Betulaceae).

"*Psylla*" *apicalis* (Ferris & Klyver, 1932)

Distribution: New Zealand: AK, BR, CL, NN, WD (Dale 1985, as *Euphalerus apicalis*), FD, ND (Tuthill 1952), MC (Ferris & Klyver 1932, as *Psyllia apicalis*; Dale 1985).

Host plants: *Sophora microphylla*, *S. prostrata*, *S. tetraptera* (Fabaceae).

Comments: Tuthill (1952) stated that the species resembles *Euphalerus nidifex* Schwartz in appearance but left it in *Psylla* until a more adequate concept of Neotropical *Euphaerus* becomes available. He also suggested that the Oriental and Pacific species referred to as *Euphalerus* depart widely from the type species *E. nidifex*. Dale (1985) pointed out important differences of the immatures of *P. apicalis* and *P. carmichaeliae* to those of *E. nidifex*. However, based on the resemblence of adults to *E. nidifex* and two Japanese species referred to as *Euphalerus*, she transferred the two New Zealand species to *Euphalerus*. Hollis & Martin (1997), when redefining *Euphalerus* to include only New World species, confirmed Tuthill's (1952) suggestion that Asian species referred to as *Euphalerus* are not congeneric with the type species. The last instar immatures of the two New Zealand species possess 8-segmented antennae, marginal setae on the caudal plate, a ventrally positioned anus with a unilayered circumanal ring and lack additional porefields on the caudal plate. These characters place the two species in the Psyllinae but outside *Psylla* and probably in a new genus. While awaiting a revision of the species they are left here in *Psylla*.

"*Psylla*" *carmichaeliae* Tuthill, 1952

Psylla carmichaeliae indistincta Tuthill, 1952; Dale 1985: 196.

Distribution: New Zealand: AK, CL, MC, ND, NN, TK, TO, SL (Dale 1985, as *Euphalerus carmichaeliae*), CO (Tuthill 1952; Dale 1985, as *Euphalerus carmichaeliae*), MB, WD (Tuthill 1952, as *Psylla carmicaheliae indistincta*; Dale 1985, as *Euphalerus carmichaeliae*), OL (Tuthill 1952); WN (FHDB).

Host plants: *Carmichaelia* spp. (Fabaceae).

Comments: Tuthill (1952) erected *Psylla carmichaeliae indistincta* for populations from Fox Glacier and Rai Valley, but Dale (1985) showed that these lie within the morphological range of the nominal species and synonymised the two. Henderson *et al.* (2010) listed the two taxa separately. '*Psylla* aff. *carmichaeliae*' has been listed as a threatened species in New Zealand (Stringer *et al.* 2012). Its host plant, *Carmichaelia torulosa*, is nationally endangered.

Triozidae

Bactericera cockerelli (Šulc, 1909)

Distribution: USA, Canada, Mexico; introduced into New Zealand: AK, BP, HB, MC, ND, WO, CL, GB, TK, TO, WI, WN, NN, NC, SC, DN (Teulon *et al.* 2009).

Host plants: Polyphagous mostly on species of Solanaceae including *Capsicum*, *Lycium* and *Solanum*.

Comments: A pest of potatoes, tomatoes, capsicum and aubergine (Solanaceae). Sporadic but sometimes devastating outbreaks are known in greenhouses and potato growing areas of Arizona, California, Colorado, New Mexico, Texas, and also New Zealand since 2006. Heavy infestations of immatures cause symptoms known as 'psyllid yellows'. Importantly *B. cockerelli* is vector of the bacterium *Candidatus* Liberibacter solanacearum, the causal agent of the "zebra chips" disease. Listed in the New Zealand national register of pests (Biosecurity New Zealand, 2016).

Casuarinicola australis Taylor, 2010

Distribution: Australia; introduced into New Zealand: (Henderson *et al.* 2010, as Gen. sp. indet. *Casuarina*), AK (Thorpe 2013); ND (LUNZ).

Host plants: *Casuarina cristata, C. cunninghamiana, C. equisetifolia, C. glauca, C. obesa, C. pauper* (Casuarinaceae).

Trioza acuta (Ferris & Klyver, 1932)

Distribution: New Zealand: MC, NN (Dale 1985), SD (Tuthill 1952; Dale 1985), WN (Ferris & Klyver, 1932, as *Powellia acuta*; Dale 1985).

Host plants: *Ozothamnus leptophyllus* (Asteraceae).

Trioza adventicia Tuthill, 1952

Distribution: Probably Australia; likely to be introduced into New Zealand: AK (Dale 1985), NN (Tuthill 1952; Dale 1985); BP, CL, GB, HB, MC, WI, WN (FHDB, LUNZ).

Host plants: *Angophora floribunda, Syzygium smithii* (Myrtaceae).

Trioza alseuosmiae Tuthill, 1952

Distribution: New Zealand: BP (Tuthill 1952; Dale 1985), TO, WO (Dale 1985).

Host plants: *Alseuosmia macrophylla* (Alseuosmiaceae).

Trioza australis Tuthill, 1952

Distribution: New Zealand: SI (Tuthill 1952; Dale 1985).

Host plants: *Brachyglottis rotundifolia* (Asteraceae).

Trioza bifida (Ferris & Klyver, 1932)

Distribution: New Zealand: AK, BR, MK, SL (Dale 1985), DN (Ferris & Klyver 1932, *Powellia bifida*; Dale 1985), NC (Ferris & Klyver 1932, *Powellia bifida*; Tuhill 1952; Dale 1985), NN, SI, WD (Tuthill 1952; Dale 1985), OL (Tuthill 1952); CL (FHDB).

Host plants: *Olearia albida, O. avicenniaefolia, O. moschata, O. paniculata* (Asteraceae).

Trioza colorata (Ferris & Klyver, 1932)

Distribution: New Zealand: MC (Dale 1985), TO, NN (Tuthill 1952; Dale 1985), NC (Ferris & Klyver 1932, as *Powellia colorata*; Tuthill 1952; Dale 1985).

Host plants: *Halocarpus bidwillii, H. biformis* (Podocarpaceae).

Trioza compressa Tuthill, 1952

Distribution: New Zealand: FD, NC, WD (Tuthill 1952), NN, SI, SL (Tuthill 1952; Dale 1985), OL, TO (Dale 1985)

Host plants: *Olearia arborescens* (Asteraceae). Tuthill (1952) listed *O. rani* as host but Dale (1985) questioned this record.

Trioza crinita Tuthill, 1952

Distribution: New Zealand: FD, SL (Tuthill 1952; Dale 1985), OL, NC, NN, TK, TO (Dale 1985), WD (Tuthill 1952).

Host plants: *Olearia arborescens*, *O. ilicifolia, O. macrodonta* (Asteraceae).

Trioza curta (Ferris & Klyver, 1932)

Distribution: New Zealand: AK (Tuthill 1952; Dale 1985), ND (Ferris & Klyver 1932, as *Powellia curta*; Dale 1985), HB, NN, TK, WN (Dale 1985), WD (Ferris & Klyver 1932, as *Powellia curta*); BR, CL, TO, (Dale 1985); DN, WI (FHDB).

Host plants: *Metrosideros excelsa, M. robusta*, *M. umbellata*, *Syzygium maire* (Myrtaceae).

Trioza dacrydii Tuthill, 1952
Distribution: New Zealand: HB, NN (Tuthill 1952; Dale 1985), NC, TO (Tuthill 1952; Dale 1985).
Host plants: *Halocarpus bidwillii, H. biformis* (Podocarpaceae).

Trioza decurvata (Ferris & Klyver, 1932)
Distribution: New Zealand: AK, MC (Ferris & Klyver 1932, as *Powellia decurvata*; Dale 1985), NN, TK, WD (Dale 1985), TO (Tuthill 1952; Dale 1985), WN (Ferris & Klyver 1932, as *Powellia decurvata*; Dale 1985).
Host plants: *Dracophyllum longifolium* (Ericaceae).

Trioza dentiforceps Dumbleton, 1967
Distribution: New Zealand: CH (Dumbleton 1967, Dale 1985).
Host plants: *Olearia traversii* (Asteraceae).

Trioza discariae Tuthill, 1952
Distribution: New Zealand: (Maskell 1879, as *Powellia vitreoradiata* p. p.; Maskell 1890, as *Trioza pellucida* p. p.), NN, OL (Tuthill 1952; Dale 1985), CO, MB, MC/NC, MK, SC, SL (Dale 1985)
Host plants: *Discaria toumatou* (Rhamnaceae).

Trioza doryphora (Maskell, 1880)
Distribution: New Zealand: (Maskell 1880, as *Powellia doryphora*), FD, SL, TK, TO (Tuthill 1952; Dale 1985), NC, WD (Dale 1985); DN (FHDB).
Host plants: *Olearia ilicifolia* (Asteraceae).

Trioza emarginata (Ferris & Klyver, 1932)
Distribution: New Zealand: BR, NN, OL, WD (Dale 1985), NC, WN (Ferris & Klyver 1932, as *Powellia emarginata*; Dale 1985), TK (Dale 1985, as *Trioza emarginata* and as "unidentified nymphs from *Coprosma* spp."), TO (Tuthill 1952; Dale 1985, as "unidentified nymphs from *Coprosma* spp.").
Host plants: *Coprosma foetidissima*, *C. lucida* (Rubiaceae).
Comments: Dale (1985) suggested that the host plant of *Trioza emarginata* is unknown. She also mentioned and described immatures of an unidentified species from *Coprosma*. In Henderson (2010) the host of *Trioza emarginata* is listed as *Coprosma*.

Trioza equalis (Ferris & Klyver, 1932)
Distribution: New Zealand: NC (Ferris & Klyver 1932, as *Powellia equalis*; Dale 1985).
Host plants: Unknown.

Trioza falcata (Ferris & Klyver, 1932)
Distribution: New Zealand: BR, CO, MK, NC, NN, TK (Dale 1985), DN, TO (Ferris & Klyver 1932, as *Powellia falcata*; Dale 1985), SL (Tuthill 1952; Dale 1985), OL, SC, SI (Tuthill 1952); WD (FHDB)
Host plants: *Aristotelia fructicosa*, *A. serrata* (Elaeocarpaceae).

Trioza fasciata (Ferris & Klyver, 1932)
Distribution: New Zealand: BP, BR, ND, CL, NN, SD, TK (Dale 1985), TO (Ferris & Klyver 1932, as *Powellia fasciata*), WI (Ferris & Klyver 1932, as *Powellia fasciata*; Dale 1985), WN (Tuthill 1952); AK (AMNZ, FHDB, LUNZ).
Host plants: *Muehlenbeckia australis*, *M. complexa* (Polygonaceae).

Trioza flavida Tuthill, 1952
Distribution: New Zealand: NN (Tuthill 1952; Dale 1985).
Host plants: *Olearia lacunosa* (Asteraceae).

Trioza gourlayi Tuthill, 1952
Distribution: New Zealand: OL (Tuthill 1952; Dale 1985).
Host plants: Perhaps *Olearia lacunosa* (Asteraceae).

Trioza hebicola Tuthill, 1952
Distribution: New Zealand: TO (Tuthill 1952; Dale 1985); SC (FHDB).
Host plants: *Hebe salicifolia*, *H. stricta* (Plantaginaceae).

Trioza irregularis (Ferris & Klyver, 1932)
Distribution: New Zealand: (Tuthill 1952), AK (Tuthill 1952), BP, SL, TO (Dale 1985), MC, WN (Ferris & Klyver 1932, as *Powellia irregularis*; Dale 1985), SI (Tuthill 1952; Dale 1985).
Host plants: *Neopanax arboreus, N. colensoi, N. laetus*, *Raukaua anomalus, R. edgerleyi, R. simplex* (Araliaceae).
Natural enemies: *Adelencyrtoides variabilis* Noyes, 1988 (Hymenoptera: Encyrtidae) (Macfarlane *et al.* 2010).

Trioza latiforceps Tuthill, 1952
Distribution: New Zealand: NN (Tuthill 1952; Dale 1985).
Host plants: *Olearia lacunosa* (Asteraceae).

Trioza obfusca (Ferris & Klyver, 1932)
Distribution: New Zealand: WN (Ferris & Klyver 1932, as *Powellia obfusca*; Dale 1985).
Host plants: *Hebe* sp. (Plantaginaceae).

Trioza obscura Tuthill, 1952
Distribution: New Zealand: OL, (Tuthill 1952), NN, TO (Tuthill 1952; Dale 1985), NC, TK, WN (Dale 1985).
Host plants: *Hebe angustifolia*, *H. coarctata*, *H. odora*, *H. stricta* (Plantaginaceae).

Trioza panacis Maskell, 1890
Distribution: New Zealand: (Maskell 1890; Ferris & Klyver 1932, as *Powellia panicis*; Tuthill 1952), AK, BR (Dale 1985), FD (Tuthill 1952); BP, DN, MC, NN, SC, TK, WN, WO (FHDB, MONZ).
Host plants: *Neopanax arboreus, Pseudopanax crassifolius, P. ferox, P. lessonii* (Araliaceae).

Trioza parvipennis Tuthill, 1952
Distribution: New Zealand: FD (Dale 1985), NN (Tuthill 1952; Dale 1985).
Host plants: *Brachyglottis adamsii*, *B. revoluta* (Asteraceae).

Trioza schefflericola Tuthill, 1952
Distribution: New Zealand: AK, BP (Tuthill 1952; Dale 1985), BR, CL, ND, SL, TO (Dale 1985); DN, WO, WN (FHDB).
Host plants: *Schefflera digitata* (Araliaceae).

Trioza scobina Tuthill, 1952
Distribution: New Zealand: NN (Tuthill 1952; Dale 1985), WD (Dale 1985).
Host plants: *Olearia lacunosa*, also possibly *O. colensoi* (Asteraceae).

Trioza styligera (Ferris & Klyver, 1932)
Distribution: New Zealand: FD, NC, TK (Dale 1985), WN (Ferris & Klyver 1932, as *Powellia styligera*; Dale 1985), perhaps TO (Ttuthill 1952).
Host plants: Unknown, perhaps *Brachyglottis buchananii* (Asteraceae) (Dale 1985).

Trioza subacuta (Ferris & Klyver, 1932)
Distribution: New Zealand: AK, BP, NN (Tuthill 1952; Dale 1985), ND, TO, WI (Tuthill 1952), SD, TK, WO (Dale 1985), WN (Ferris & Klyver 1932, as *Powellia subacuta*; Tuthill 1952; Dale 1985).
Host plants: *Brachyglottis repanda* (Asteraceae).

Trioza subvexa Tuthill, 1952
Distribution: New Zealand: AK, BR, MK (Dale 1985), NC, NN, WD (Tuthill 1952; Dale 1985)
Host plants: *Olearia avicenniaefolia* (Asteraceae).

Trioza vitreoradiata (Maskell, 1879)
Distribution: Introduced into France, Ireland, UK; New Zealand: (Maskell 1879, 1880, p. p., as *Powellia vitreoradiata*; Maskell 1890, as *Trioza pellucida*; Marriner 1903, as *Trioza alexis*), AK, WN (Ferris & Klyver 1952, as *Powellia vitreoradiata*; Tuthill 1952; Dale 1985), BR, CL, ND, NN, SD, WI (Dale 1985), MC (Nelson 2012), ND (Tuthill 1952; Dale 1985), SI (Tuthill 1952).
Host plants: *Pittosporum colensoi, P. crassifolium, P. ellipticum, P. eugenioides, P. tenuifolium, P. tobira, P. undulatum* and rarely *Hymenosporum flavum* (Pittosporaceae); *Feijoa sellowiana* (Myrtaceae) as host needs confirmation. Can also complete its life cycle on *Citrus paradisi* (Rutaceae) with high population noted nearby on *Pittosporum* shrubs (Nelson 2012).
Natural enemies: *Halmus chalybeus, Drepanacra binocular, Boriomyia maorica, Micromus tasmaniae* (Macfarlane *et al.* 2010)

Trioza sp.
Distribution: New Zealand: AK, CL, WN, WO (Dale 1985, as *Trioza* n. sp. 'Brenda May').
Host plants: *Olearia furfuracea*, *O. rani* (Asteraceae).

Trioza sp.
Distribution: New Zealand: CH (Dale 1985, as *Trioza* n. sp. 'Chathams').
Host plants: *Leptinella featherstonii* (Asteraceae).

Trioza sp.
Distribution: New Zealand: NN (Dale 1985, as *Trioza* n. sp. 'Flora Hut').
Host plants: *Olearia lacunosa* (Asteraceae).

Trioza sp.
Distribution: New Zealand: SL, WN (Dale 1985, as *Trioza* n. sp. 'Fortrose').
Host plants: *Elaeocarpus hookerianus*, possibly also *E. dentatus* (Elaeocarpaceae).

Trioza sp.
Distribution: New Zealand: FD, MC, NN, OL, SL, TK (Dale 1985, as *Trioza* n. sp. 'Hut Creek').
Host plants: *Hebe odora*, *H. subalpina* (Plantaginaceae).

Trioza sp.
Distribution: New Zealand: CO (Dale 1985, as *Trioza* n. sp. 'Hyde Rock').
Host plants: *Celmisia brevifolia* (Asteraceae).

Trioza sp.
Distribution: New Zealand: MK, NC, TK (Dale 1985, as *Trioza* n. sp. 'Kea Point').
Host plants: *Brachyglottis buchananii, B. elaeagnifolia* (Asteraceae).

Trioza sp.
Distribution: New Zealand: CO (Dale 1985, as *Trioza* n. sp. 'Logan Burn').
Host plants: Unknown, possibly *Celmisia* sp. (Asteraceae).

Trioza sp.
Distribution: New Zealand: TO, WI (Dale 1985, as *Trioza* n. sp. 'Massey').
Host plants: *Olearia solandri, O. virgata* (Asteraceae).

Trioza sp.
Distribution: New Zealand: BR (Dale 1985, as *Trioza* n. sp. 'Mt Dewar').
Host plants: Unknown.

Trioza sp.
Distribution: New Zealand: OL (Dale 1985, as *Trioza* n. sp. 'Niger Mt').
Host plants: Unknown.

Trioza sp.
Distribution: New Zealand: CO (Dale 1985, as *Trioza* n. sp. 'Old Man Range').
Host plants: *Celmisia haastii* (Asteraceae).

Trioza sp.
Distribution: New Zealand: CL, ND (Dale 1985, as *Trioza* n. sp. 'Omahuta').
Host plants: *Brachyglottis kirkii* (Asteraceae).

Trioza sp.
Distribution: New Zealand: MC, NN, SL (Dale 1985, as *Trioza* n. sp. 'Price's Valley').
Host plants: *Plagianthus betulinus* (Malvaceae).

Trioza sp.
Distribution: New Zealand: SI, SN (Dale 1985, as *Trioza* n. sp. 'Snares I').
Host plants: Probably *Olearia colensoi*, *O. lyallii* (Asteraceae).

Trioza sp.
Distribution: New Zealand: SN (Dale 1985, as *Trioza* n. sp. 'Snares II').
Host plants: probably *Brachyglottis stewartiae* (Asteraceae).

Trioza sp.
Distribution: New Zealand: TO (Dale 1985, as *Trioza* n. sp. 'Taranaki Falls').
Host plants: *Rapanea divaricata* (Primulaceae).

Trioza sp.
Distribution: New Zealand: CO, FD, MB, OL (Dale 1985, as *Trioza* n. sp. 'Wards Pass').
Host plants: Unknown, possibly *Celmisia sessiliflora* (Asteraceae) (Dale 1985).

Trioza sp.
Distribution: New Zealand: FD (Dale 1985, as *Trioza* n. sp. 'Wilmot Pass').
Host plants: *Olearia crosby-smithiana* (Asteraceae).

Gen. sp.
Distribution: New Zealand: AU, CA (Dale 1985, as n. gen., n. sp. 'Campbell Island').
Host plants: *Anisotome antipoda* (Apiaceae).
Comments: A species with highly modified forewings but otherwise similar to New Zealand triozids (Dale 1985).

Gen. sp.
Distribution: Australia (Gary Taylor 2015, pers. comm); introduced into New Zealand: (Henderson *et al.* 2010, as Gen. sp. indet. *Casuarina*); AK, ND (LUNZ).
Host plants: *Casuarina* sp. (Casuarinaceae).

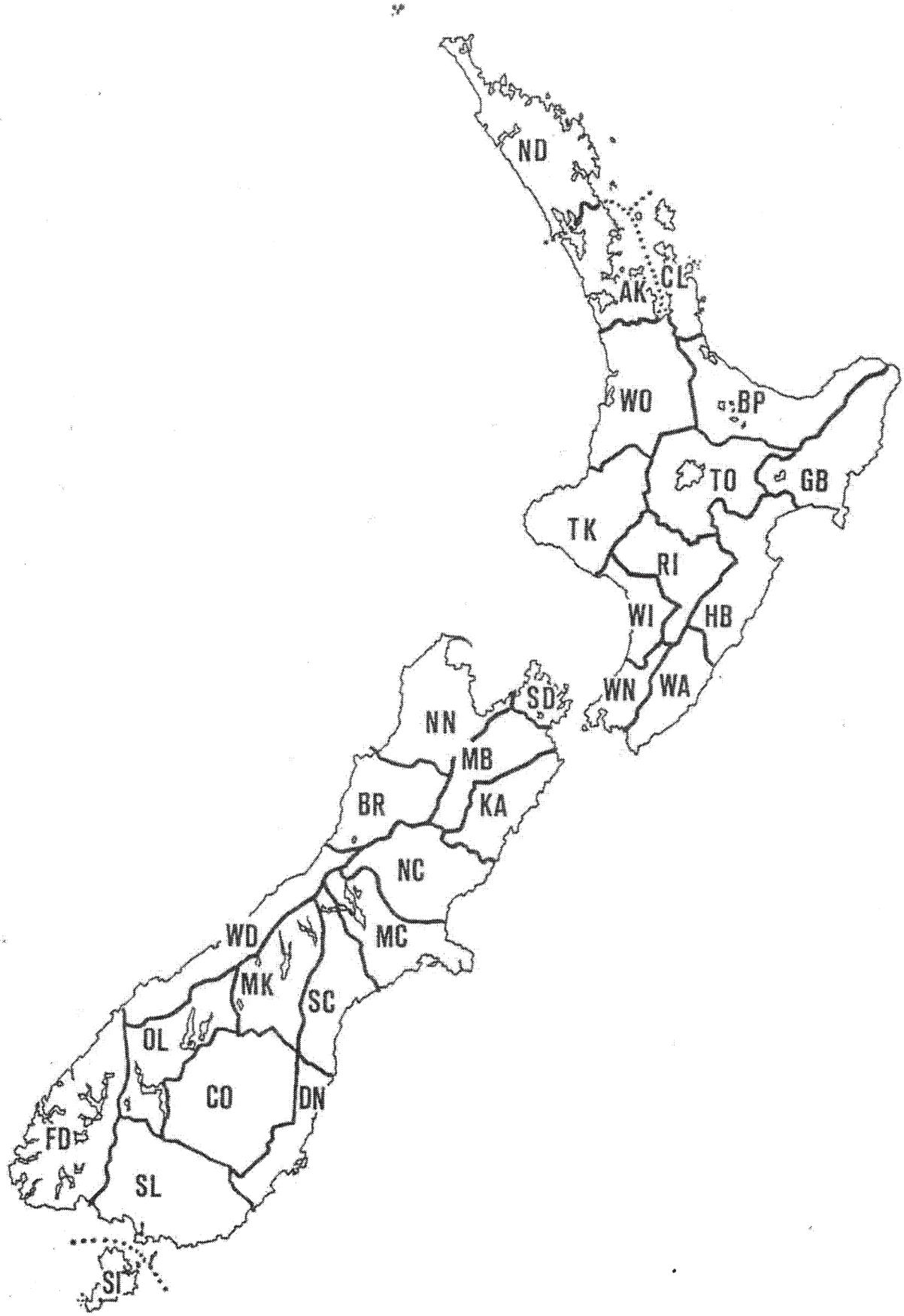

FIGURE 1. Map of New Zealand with regional subdivisions used in the checklist (Crosby *et al.* 1998).

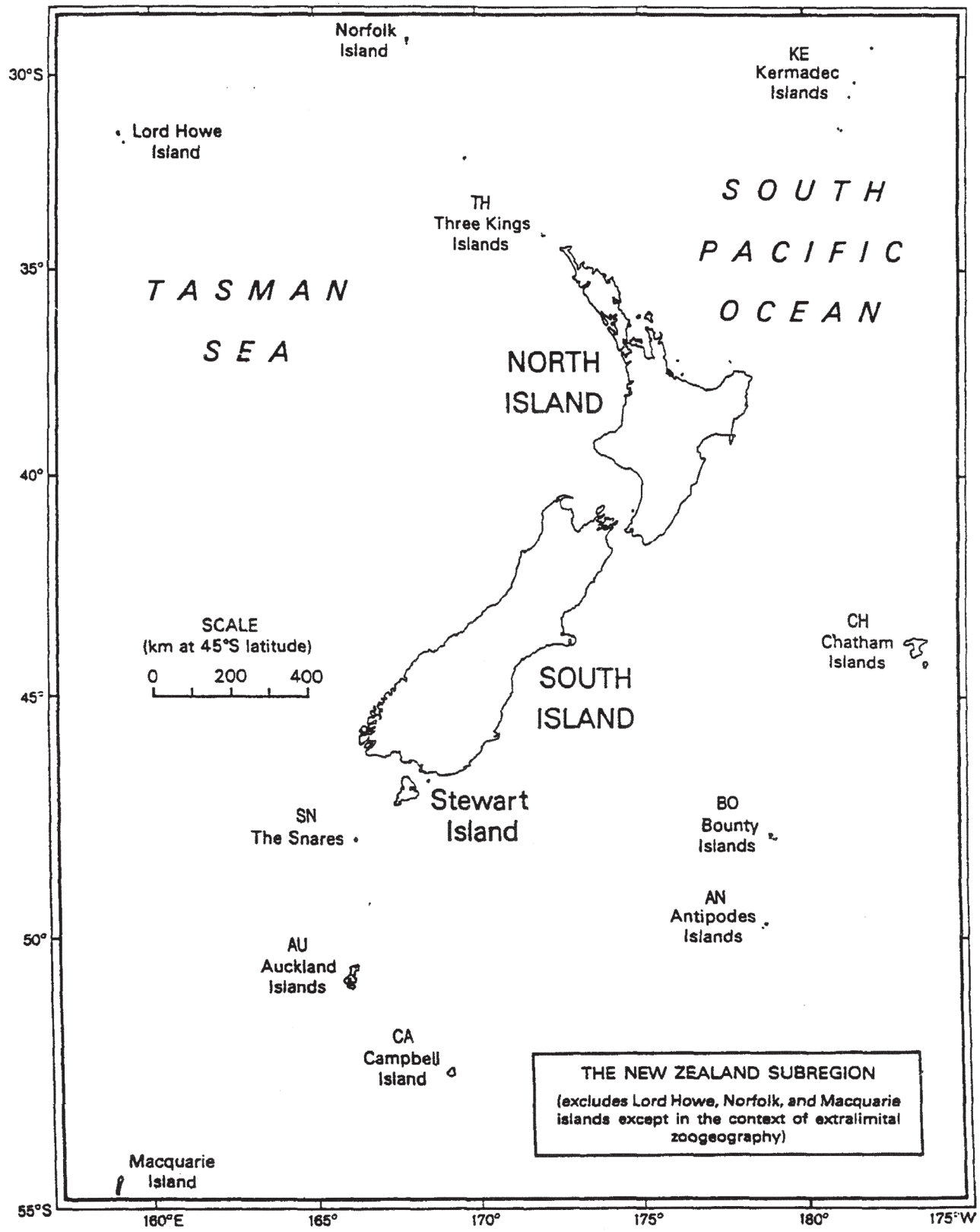

FIGURE 2. Map of New Zealand with the offshore islands (Crosby *et al.* 1998).

TABLE 1. New Zealand psyllid families, subfamilies, genera (with number of species) and host plant families (genera).

Psyllid family	Psyllid subfamily	Psyllid genus (# species)	Host plant family (genus)
Aphalaridae	Rhinocolinae	*Anomalopsylla* (3)	Asteraceae (*Olearia*), Rutaceae (*Geijera*)
Aphalaridae	Spondyliaspidinae	*Anoeconeossa* (1)	Myrtaceae (*Eucalyptus*)
Aphalaridae	Spondyliaspidinae	*Blastopsylla* (1)	Myrtaceae (*Eucalyptus*)
Aphalaridae	Spondyliaspidinae	*Cardiaspina* (1)	Myrtaceae (*Eucalyptus*)
Aphalaridae	Spondyliaspidinae	*Creiis* (1)	Myrtaceae (*Eucalyptus*)
Aphalaridae	Spondyliaspidinae	*Cryptoneossa* (1)	Myrtaceae (*Eucalyptus*)
Aphalaridae	Spondyliaspidinae	*Ctenarytaina* (10)	Myrtaceae (*Eucalyptus, Kunzea, Leptospermum, Lophostemon*), Onagraceae (*Fuchsia)*, Rutaceae (*Boronia*)
Aphalaridae	Spondyliaspidinae	*Eucalyptolyma* (1)	Myrtaceae (*Eucalyptus*)
Aphalaridae	Spondyliaspidinae	*Glycaspis* (1)	Myrtaceae (*Eucalyptus*)
Aphalaridae	Spondyliaspidinae	*Phellopsylla* (1)	Myrtaceae (*Eucalyptus*)
Calophyidae	Atmetocraniinae	*Atmetocranium* (1)	Cunoniaceae (*Weinmannia*)
Calophyidae	Calophyinae	*Calophya* (1)	Anacardiaceae (*Schinus*)
Liviidae	Euphyllurinae	"*Gyropsylla*" (1)	unknown
Liviidae	Euphyllurinae	*Psyllopsis* (2)	Oleaceae (*Fraxinus*)
Homotomidae	Macrohomotominae	*Mycopsylla* (2)	Moraceae (*Ficus*)
Psyllidae	Acizziinae	*Acizzia* (11)	Fabaceae (*Acacia*, *Albizia*), Proteaceae (*Grevillea, Hakea*), Sapindaceae (*Dodonaea*), Solanaceae (*Brugmansia*, *Physalis, Solanum*)
Psyllidae	Psyllinae	*Arytainilla* (1)	Fabaceae (*Cytisus*)
Psyllidae	Psyllinae	*Baeopelma* (1)	Betulaceae (*Alnus*)
Psyllidae	Psyllinae	'*Psylla*' (2)	Fabaceae (*Carmichaelia*, *Sophora*)
Triozidae		*Bactericera* (1)	polyphagous, mostly Solanaceae
Triozidae		*Casuarinicola* (1)	Casuarinaceae (*Casuarina*)
Triozidae		*Trioza* (52)	Alseuomiaceae (*Alseuosmia*), Araliaceae (*Pseudopanax, Schefflera*), Asteraceae (*Brachyglottis*, *Cassinia, Celmisia, Cotula, Leptinella, Olearia*), Elaeocarpaceae (*Aristotelia, Elaeocarpus*), Ericaceae (*Dracophyllum*), Malvaceae (*Plagianthus*), Primulaceae (*Myrsine*), Myrtaceae (*Acca, Acmena, Metrosideros, Syzygium*), Pittosporaceae (*Pittosporum*), Podocarpaceae (*Halocarpus*), Polygonaceae (*Muehlenbeckia*), Rhamnaceae (*Discaria*), Plantaginaceae (*Hebe*)
Triozidae		Gen. Dale (1985) (1)	Apiaceae (*Anisotome*)
Triozidae		Gen. Henderson *et al.* (2010) (1)	Casuarinaceae (*Casuarina*)

Discussion

The psyllid fauna of New Zealand is characterised by two major elements. Firstly there are a large number of endemic Triozidae, currently referred to the artificial genus *Trioza*. Of these triozids, the majority are probably the descendents of a single Australian ancestor associated with Asteraceae that subsequently radiated in New Zealand, and similarly a second though much smaller group may be descended from an Australian or Oceanian ancestor that was associated with Myrtaceae (Burckhardt, unpublished information). The 52 species of *Trioza* present in New Zealand, especially if compared to only 10 amongst the more numerous and diverse psyllid fauna in Australia

(Ouvrard, 2016), suggest a very interesting radiation involving a series of host switches along their evolutionary history. The genera *Anomalopsylla* and *Ctenarytaina* also show species native to Australia, but *Trioza* is peculiar for having radiated far more in New Zealand.

Secondly there are many introduced species. This checklist summarises 35 species introduced to New Zealand; 29 are native to Australia, four to the Palaearctic region and two to America. Undoubtedly, the preponderant flow of species from Australia to New Zealand has been facilitated by the social and political-economic relations that have increased over the last centuries (Whiters 2001). The importation of Australian *Acacia* (Fabaceae) and *Eucalyptus* (Myrtaceae) plant species for forestry and as ornamentals will certainly have aided the establishment of their associated psyllids, which make up the majority of the introduced species. In addition to these well known pathways, Yen *et al.* 2014 suggest that aerial dispersal from Australia to New Zealand is very much possible because of the prevailing wind patterns. This has been confirmed for many insects groups such as Lepidoptera (Yen *et al.* 2014) and also for smaller insects such as the lettuce aphid which is believed to have invaded Australia from New Zealand via this pathway. New arrivals from Australia would not be unexpected considering the high numbers of psyllid species occurring there: over 350 are currently reported (Hollis 2004; Ouvrard 2016) and 446 estimated (Yen 2002). Continued accurate knowledge on species in the two countries and their host plants will be an important aspect of preventing or managing future invasions (Goldson *et al.* 2010).

Establishment of an up to date list of the New Zealand Psylloidea is a fundamental step towards a better understanding of their biodiversity and a valuable foundation for further studies. In particular, by summarizing the extent of undescribed species as recognized by Dale (1985) but not formally named, as well as highlighting some dubious placements (e.g. *Gyropsylla*), the extent of the taxonomic revision that is needed is easier to appreciate. Formal descriptions of the undescribed species are planned in the context of a volume on psyllids in the Fauna of New Zealand series (Dale, personal communication), as are publications to resolve the taxonomy based on morphological (Dale, in preparation) and molecular data (Martoni, in preparation).

In addition, while the native fauna of New Zealand has previously been treated in detail concerning biology and biogeography (Dale, 1985), this list will help to establish more accurate distribution, host plant and natural enemy data. This will be particularly important to those psyllids of relevance to conservation, such as *Anomalopsylla* "Port underwood" and "*Psylla*" *carmichaeliae* whose host plants are threatened (Stringer *et al.* 2012). For New Zealand this list will also be very useful in preparedness for distinguishing new potentially invasive pest species that may arrive and in the surveillance for associated psyllid-vectored plant pathogens. Accurate records of the New Zealand species is also central to understanding the ecology and physiology of psyllid-microbial associations, which may in turn be important in the context of susceptibility of plants to disease (Chuche *et al*., 2016).

Acknowledgements

We thank David Ouvrard (the Natural History Museum, London) and an anonymous reviewer, John Marris and Samuel D. J. Brown (both Lincoln University), and Gary Taylor (The University of Adelaide) for useful comments and suggestions that have improved this manuscript. Many thanks also to Grace Hall and Marie-Claude Larivière (both Landcare Research), Cor Vink (CMNZ), Ricardo Palma and Phil Sirvid (both MONZ), Stephanie Sopow (SION), John Early and Dhahara Ranatunga (both AMNZ), and A. Flynn and S. Bennett (both Ministry for Primary Industries) for the psyllid information they shared with us. This research is partly supported by the Australian Government's Plant Biosecurity Cooperative Research Centre.

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