

# **Selected references for identifying New Zealand Hemiptera (Homoptera and Heteroptera), with notes on nomenclature**

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## **Abstract.**

Over 140 references helpful for identifying New Zealand Hemiptera are listed. An alphabetical family index to the references gives the number of species now recorded for the 54 families and notes on nomenclatural changes and recently recorded species.

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## INTRODUCTION

All the information students are likely to need for identifying New Zealand Hemiptera to the family level is in *The Insects of Australia* "Chapter 26. Hemiptera" (Woodward, Evans, and Eastop 1970). This well-illustrated work has the most recent keys to the families of Hemiptera occurring in this region of the world. Woodward's (1953) earlier key to the families of the suborder Heteroptera known from New Zealand is also useful. Below the family level identification is more difficult, for much of the endemic fauna is poorly known and the literature is scattered.

Although the references indexed here should serve as a starting point for identifying New Zealand Hemiptera to genus or species, this list is incomplete. For many groups additional references may be found in Miller's (1956) "Bibliography of New Zealand Entomology" (family indexes, p. 468-73) and Wise's (1977) "A Synonymic Checklist of the Hexapoda of the New Zealand Sub-region. The Smaller Orders." Wise's "Checklist", indispensable for current nomenclature, is also a valuable aid to identification. It includes: a systematic list of the currently valid names for nearly all taxa of Hemiptera (and 23 other orders) from the New Zealand sub-region; citations to the original descriptions of the genera and species; for each species, citations to the first New Zealand record and to any alternative names previously used with reference to New Zealand; and a comprehensive, alphabetical index to the taxa (including specific synonyms).

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ANNOTATED FAMILY INDEX TO REFERENCES  
 [Numbers of species are for the New Zealand sub-region]

ACANTHOSOMATIDAE: 4 spp.; Woodward 1953, 1956.

ACHILIDAE: 2 spp.; Deitz and Helmore 1979.

ADELGIDAE: 2 spp.; Eastop 1966.

ALEYRODIDAE: 12 spp.; Dumbleton 1957 [Key], 1964. **New Zealand Records:** A record of *Orchamoplatus mammaeferus* (Quaintance & Baker, 1917) in N.Z. (Russell 1958; Wise 1977) has been found to be based on specimens intercepted from Fiji (P. A. Maddison, pers. comm.) — a record of *Neomaskellia bergii* (Signoret, 1868) in N.Z. (Mimeur 1944; Mound and Halsey 1978) is presumably based on Maskell's (1890) original description of *Aleurodes sacchari* from Fiji published under the title "On some Aleurodidae from New Zealand and Fiji".

ALYDIDAE: 1 sp., *Melanacanthus margineguttatus* Distant, 1911: Woodward 1961.

ANTHOCORIDAE: 6 spp.; Gross 1954a, b, 1957.

APHIDIDAE (see also ADELGIDAE, PEMPHIGIDAE): 77 spp.; Cottier 1953; Eastop 1966; Sunde 1979 [*Sensoriaphis*]. **Nomenclature:** Eastop and Hille Ris Lambers (1976) altered the generic placement of some aphids recorded for N.Z. (Wise 1977) to the following: *Acyrtosiphon malvae* (Mosley, 1841) [*Aphis*]; *Calapha flavis* Mordvilko, 1928;

*Microlophium primulae* (Theobald, 1913) [*Macrosiphum*]; *Neotoxoptera oliveri* (Essig, 1935) [*Micromyzus*]; *Pseudoregma panicola* (Takahashi, 1921) [*Oregma*]; *Sitobion fragariae* (Walker, 1848) [*Aphis*]; *S. miscanthi* (Takahashi, 1921) [*Macrosiphum*]; *Tuberculatus annulatus* (Hartig, 1841) [*Aphis*]; *Uroleucon sonchi* (Linnaeus, 1767) [*Aphis*]. They also noted the following specific synonymies: *Aphis persicaecola* Boisduval, 1867, is a junior synonym of *Brachycaudus persicae* (Passerini, 1860); *Aphis spiraeicola* Patch, 1914, is a junior synonym of *Aphis citricola* van der Goot, 1912; *Kallistaphis basalis* Stroyan, 1957, is a junior synonym of *Calaphis flava* Mordvilko, 1928; *Lachnus juniperinus* Mordvilko, 1895, is a junior synonym of *Cinara cupressi* (Buckton, 1881). Smith and Parron (1978) considered *Sitobion* Mordvilko, 1921, to be a subgenus of *Macrosiphum* Passerini, 1860. **New Zealand Records:** *Acyrtosiphum pisum* (Harris, 1776) occurs in N.Z. (Archibald *et al.* 1979) — *Myzocallis caprini* (Koch, 1855) occurs in N.Z. (Budgeon 1979).

APHROPHORIDAE: 3 spp.; Evans 1966; Archibald *et al.* 1979. **New Zealand Record:** *Philaneus spumarius* (Linnaeus, 1758) occurs in N.Z. (Archibald *et al.* 1979).

ARADIDAE: 30 spp.; Usinger and Matsuda 1959 [Key to subfamilies, genera, some spp.] — Kormilev 1971; Lee and Pendergrast 1977; Pendergrast 1965a, b, 1968 [Revisions of subfamilies]. **Nomenclature and New Zealand Records:** *Ctenoneurus pendergrasti* Kormilev, 1971, was omitted in Wise 1977 — *C. setosus* n. sp. occurs in N.Z. (Lee and Pendergrast 1977).

ASTEROLECANIIDAE (see also CEROCOCCIDAE): 3 spp.; Morrison and Morrison 1927; Russell 1941.

BERYTIDAE: 1 sp., *Neides wakefieldi* F. B. White, 1878: Woodward 1961.

CERATOCOMBIDAE: research in progress, Dr P. Štys.

CERCOPIIDAE: see APHROPHORIDAE.

CEROCOCCIDAE: 2 spp.; Lambdin and Kosztarab 1976, 1977 [Keys to genera and *Cerococcus* spp.] **Nomenclature:** *Solenophora* Maskell, 1890, is a valid, monotypic genus with *S. fagi* Maskell, 1890, as type (Lambdin and Kosztarab 1976).

CICADELLIDAE: 90 spp.; Evans 1966 [Key to tribes] — Knight 1973a, b, 1974a, b, 1975, 1976a, b [Revisions of subfamilies except 1976b].

CICADIDAE: see TIBICINIDAE.

CIMICIDAE: 1 sp., *Cimex lectularius* Linnaeus, 1758: Woodward 1961, or Zimmerman 1948a.

CIXIIDAE: 17 spp.; Deitz and Helmore 1979 [Key to genera] — Myers 1924, 1927; Fennah 1975.

COCCIDAE: 31 spp.; no recent work for N.Z., useful references: Maskell 1887, Steinweden 1929, 1946; Williams and Kosztarab 1972; Zimmerman 1948b. **Nomenclature:** *Chermes filicum* Boisduval, 1867, is a junior synonym of *Saissetia coffeae* (Walker, 1852) (Green 1897; Kloet and Hincks 1964) — *Coccus persicae* Fabricius, 1776, and *Lecanium corni* Bouché, 1884, belong to the genus *Parthenolecanium* Sulc, 1908 (Borchsenius 1957; Kloet and Hincks 1964) — *Gascardia Targioni-Tozzetti* in Gascard, 1893, is a junior synonym of *Ceroplastes* Gray, 1828 (Gimpel *et al.* 1974) — *Lecanium cassinae* Maskell, 1891, is a junior synonym of *Saissetia oleae* [(Olivier, 1791)] (Borchsenius 1957) — *L. elongatum* Signoret, 1873, is a junior synonym of *Parthenolecanium persicae* (Fabricius, 1776), but *Coccus elongatus* of authors (*non* Signoret, 1873) refers to *C. longulus* (Douglas, 1887) (Ben-Dov 1977) — *L. depressum* Targioni-Tozzetti, 1867, is a junior synonym of *Parasaissetia nigra* (Nietner, 1861) (Maskell 1894; Kloet and Hincks 1964) — *L. maculatum* Signoret, 1873, is a junior synonym of *Coccus hesperidum* (Linnaeus, 1758) (Fonseca 1953) — *Pulvinaria camelicola* Signoret, 1873, is a junior synonym of *P. floccifera* (Westwood, 1870) (Williams and Kosztarab 1972), but some specialists place *P. psidii* Maskell, 1893, and *P. floccifera* in *Chloropulvinaria* Borchsenius, 1952 (Borchsenius 1957; Kloet and Hincks 1964). **New Zealand Records:** Records of *Coccus acuminatus* (Signoret, 1873) [now *Kilifia acuminata* (Signoret, 1873) (De Lotto 1965)] in N.Z.

- (Merrill and Chaffin 1923, Quayle 1938, Merrill 1953) are presumably based on a Hawaiian record published in a N.Z. journal (Maskell, 1893) — *Pulvinaria hydrangeae* Steinweden, 1946, occurs in N.Z. (Archibald *et al.* 1979).
- COREIDAE (see also ALYDIDAE): 1 sp., *Acantholybas brunneus* (Breddin, 1900): Woodward 1961.
- CORIXIDAE: 6 spp.; Young 1962.
- CRYPTOCOCCIDAE: 1 sp., *Cryptococcus nudatus* Brittin, 1915: Hoy 1962a.
- CRYPTOSTEMMATIDAE: see CERATOCOMBIDAE and SCHIZOPTERIDAE.
- CYDNIDAE: 3 spp.; Woodward 1953, 1956.
- DELPHACIDAE: 18 spp.; Deitz and Helmore 1979; Fennah 1965.
- DERBIDAE: 1 sp., *Eocenchrea maorica* (Kirkaldy, 1909): Deitz and Helmore 1979.
- DIASPIDIDAE: 74 spp.; Ferris 1937-1942 (or McKenzie 1956) [Keys to most genera in N.Z.] — Ben-Dov 1976 [*Natalaspis*]; Brittin 1937 [*Leucaspis*]; Borchsenius and Williams 1963 [*Aspidioides*, *Eulepidosaphes*, *Labidaspis*, *Scrupulaspis*]; de Boer and Valentine 1977 [*Leucaspis*, *Salicicola*]; Ferris 1936 [*Symeria*, *Trulliflorinia*]; Maskell 1879, 1880 [*Fusilaspis*]; Morrison and Morrison 1922 [*Anoplaspis*]. **Nomenclature:** *Cornuaspis* MacGillivray, 1921, and *Eucornuaspis* Borchsenius, 1963, are junior synonyms of *Lepidosaphes* Shimer, 1968 (Takagi 1970) — *Fiorinia maskelli* Brittin, 1915, belongs to the genus *Salicicola* Lindinger, 1905; *Leucaspis morrisoni* (Brittin, 1915) is a valid species; *L. myersi* Green, 1929, is a junior synonym of *L. gigas* (Maskell, 1879); *L. mixta* de Boer in de Boer and Valentine, n.sp., described (de Boer and Valentine 1977) — *Phenacaspis* Cooley and Cockerell in Cockerell, 1899, is a junior synonym of *Chionaspis* Signoret, 1869 (Takagi and Kawai 1967) — *Tennaspidiotus* MacGillivray, 1921, is a junior synonym of *Aspidiotus* Bouché, 1833 (Takagi 1969) — [see also Deitz and Tocker in press]. **New Zealand Records:** *Aulacaspis rosarum* Borchsenius, 1958, occurs in N.Z. (Beardsley 1973; Archibald *et al.* 1979) — *Carulaspis juniperi* (Bouché, 1851) occurs in N.Z., *C. visci* (Schrank, 1781) does not (Deitz 1979b) — *Kuwanaspis pseudoleucaspis* (Kuwana, 1923) occurs in N.Z. (Archibald *et al.* 1979) — *Pinnaspis aspidistrae* (Signoret, 1869) occurs in N.Z. (Newstead 1900; Archibald *et al.* 1979).
- DICTYOPHARIDAE: 1 sp., *Thanatodictya tillyardi* Myers, 1923: Deitz and Helmore 1979.
- DIPSOCORIDAE: see CERATOCOMBIDAE.
- ENICOCEPHALIDAE: 8 spp.; Woodward 1956.
- ERIOCOCCIDAE (see also CRYPTOOCOCCIDAE): 75 spp.; Hoy 1962a.
- FLATIDAE: 2 spp.; Deitz and Helmore 1979.
- GERRIDAE: 1 sp., *Halobates sericeus* Eschscholtz, 1822 (Kermadec Is.): Zimmerman 1948a.
- HALIMOCOCCIDAE: 1 sp., *Colobopyga* n.sp.: Deitz 1979a.
- HENICOCEPHALIDAE: see ENICOCEPHALIDAE.
- HYDROMETRIDAE: 1 sp., *Hydrometra risbeci* Hungerford, 1938: Hungerford 1938.
- LYGAEIDAE: 52 spp.; Zimmerman 1948a [Key to subfamilies and tribes]; Sweet 1967 [Key to tribes of Rhyparochrominae] — Eyles 1970 [*Stizocephalus*], 1971a [Udecorini], 1973 [*Dieuches*]; Eyles and Ashlock 1969 [*Nysius*]; Malipatil 1976 [*Metagerra*], 1977a [Drymini], 1977b [Targaremini], 1978a [Nothochromini], 1978b [Myodochini]; Slater *et al.* 1962 [Nothochromini]; Usinger 1942 [Orsiliinae]; Woodward and Malipatil 1977 [Lethaeini]. **Nomenclature and New Zealand Records:** Rhyparochrominae: Lethaeini: *Paramyocara iridescens*, n. gen. and sp., occurs in N.Z. (Woodward and Malipatil 1977) — Drymini: *Grossander major* (Gross, 1965) and *Paradrymus exilirostris* Bergroth, 1916, occur in N.Z. (Malipatil 1977a) — Targaremini: *Forsterocoris stewartensis*, n.sp.; *Geratarma*, n. gen., *G. eylesi*, n.sp., *G. manapourensis*, n.sp.; *Paratruncala*, n. gen., (type-species: *Tomocoris insularis* Woodward, 1953); *Truncala insularis*, n.sp.; and *Woodwardiana*, n.gen. (type-species: *Regatarma forsteri evagorata* Woodward, 1953, given species status), *W. paparia*, n.sp., were described for N.Z.; also

*Eminocoris* Eyles, 1967, is a junior synonym of *Millerocoris* Eyles, 1967; *Regatarma forsteri nelsonensis* Woodward, 1953, and *R. forsteri notialis* Woodward, 1953, were elevated to species of *Woodwardiana*; *R. forsteri obsolescens* Woodward, 1953, and *R. forsteri stephen[en]sis* Woodward, 1953, are synonyms of *R. forsteri* Woodward, 1953; *R. salmoni* Woodward, 1953, was placed in *Forsterocoris* Woodward, 1953 (Malipatil 1977b) — Myodochini: *Remaudiereana* Hoberlandt, 1954, is a junior synonym of *Pachybrachius* Hahn, 1826; *P. nigriceps* (Dallas, 1852) occurs in the Kermadec Is., but not N.Z.; *Horridipamera robusta*, n.gen. and sp., occurs in N.Z. (Malipatil 1978b).

MARGARODIDAE: 8 spp.; Morrison 1928.

MEMBRACIDAE: 1 sp., *Acanthucus trispinifer* (Fairmaire, 1846) [see cover illustration]: Eyles 1971b or Evans 1966.

MESOVELIIDAE: research in progress, Dr J. T. Polhemus.

MIRIDAE: 26 spp.; Carvalho 1955, and Eyles and Carvalho 1975 [Keys to genera] — Eyles 1975; Woodward 1950. **Nomenclature:** *Eurystylus australis* Poppius, 1911, is a junior synonym of *Sidnia kinbergi* (Stål, 1859) (Carvalho 1976).

NABIDAE: 4 spp.; Harris 1928 [Key to genera]; Bergroth 1927; Hutton 1899; Kerzhner 1969. **Nomenclature:** *Redwiolus quadripunctatus* Bergroth, 1927, is a junior synonym of *Nabis mauricus* Walker, 1873 (Kerzhner 1969).

NOTONECTIDAE: 2 spp.; Young 1962.

ORTHEZIIDAE: 1 sp., *Newsteadia myersi* Green, 1929; Hoy 1962b.

PELORIDIIDAE: 6 spp.; Woodward 1958 [*Oiophysa cumberi* Woodward, 1958, was omitted in Wise 1977].

PEMPHIGIDAE: 8 spp.; Eastop 1966.

PENTATOMIDAE (see also ACANTHOSOMATIDAE): 8 spp.; Woodward 1953, 1956. **New Zealand Record:** *Poecilometis gravis* (Fabricius, 1781), originally described as *Cimex gravis* from N.Z. (Fabricius 1781), is an Australian species (Gross 1972) not present in N.Z.

PHENACOLEACHIIDAE: 2 spp.; Beardsley 1964 [*Phenacoleachia australis* Beardsley, 1964, was omitted in Wise 1977]; Morrison and Morrison 1922.

PHYLLOXERIDAE: 2 spp.; Eastop 1966.

PSEUDOCOCCIDAE: 52 spp.; McKenzie 1967 [Key to genera recorded for N.Z. except *Allococcus*, *Paracoccus*, *Paraferrisia*, *Sarococcus*, *Vryburgia*] — Beardsley 1964 [*Nipaeococcus*, *Trionymus*]; de Boer 1967 [*Chorizococcus*, *Spilococcus*], 1968 [*Antoninoides*, *Pseudantonina*]; Brittin 1938 [*Trionymus*]; Cox 1978 [*Rhizoecus*]; De Lotto 1967 [*Vryburgia*]; Ezzat and McConnell 1956 [*Allococcus*]; Williams and de Boer 1973 [*Chorizococcus*, *Dysmiococcus*, *Paracoccus*, *Paraferrisia*, *Rhizoecus* (as *Ripersiella*), *Sarococcus*, *Trionymus*.] **Nomenclature and New Zealand Records:** *Nipaeococcus longispinus* Beardsley, 1964, and *N. campbellensis* Beardsley, 1964, were omitted in Wise 1977 — *Pseudococcus comstocki* (Kuwana, 1902) and *P. maritimus* (Ehrhorn, 1900) do not occur in N.Z. (Cox 1977) — *P. lounsburyi* Brain, 1912, was placed in *Vryburgia* De Lotto, 1967 (De Lotto 1967) — *Rhizoecus oliveri* n. sp. and *R. pritchardi* McKenzie, 1960, occur in N.Z.; *R. perprocerus* De Lotto, 1961, is a junior synonym of *R. graminis* (Hambleton, 1964); *R. plantaginis* Hambleton, 1974 is a junior synonym of *R. californicus* Ferris, 1953 (Cox 1978).

PSYLLIDAE: 55 spp.; Dumbleton 1964, 1967; Ferris and Klyver 1932; Tuthill 1952. **Questionable New Zealand Record:** *Trioza eucalypti* Froggatt, 1901, [now *Schedotrioza eucalypti* (Froggatt, 1901) (Tuthill and Taylor 1955)] was reported in N.Z. by Tillyard (1926), but not subsequent workers (Wise 1977).

REDUVIIDAE: 8 spp.; China and Miller 1959 [Key to subfamilies]; Wygodzinsky 1966, 1979.

RHOPALIDAE: 1 sp., *Leptocoris tagalica* Burmeister, 1834: Gross 1960.

RICANIIDAE: 1 sp., *Scolypopa australis* (Walker, 1851): Deitz and Helmore 1979.

- SALDIDAE: 7 spp.; generic revision in progress, Dr J. T. Polhemus; Cobben 1961; Drake and Hoberlandt 1950; Hutton 1899.
- SCHIZOPTERIDAE: research in progress, Dr P. Štys.
- TIBICINIDAE: 30 spp.; Dugdale 1972 [Key to genera]—Dugdale and Fleming 1969, 1978; Fleming 1973; Hudson 1950; Myers 1929. **Nomenclature and New Zealand Records:** *Maoricada alticola*, n.sp., *M. clamitans*, n.sp., *M. mangu celer*, n.ssp., *M. mangu gowlayi*, n.ssp., *M. mangu multicostata*, n.ssp., *M. nigra frigida*, n.ssp., *M. otagoensis otagoensis*, n.sp. and ssp., *M. otagoensis maceweni*, n.ssp., *M. phaeoptera*, n.sp., and *M. tenuis*, n.sp., occur in N.Z. (Dugdale and Fleming 1978).
- TINGIDAE: 4 spp.; Bergroth 1927; Froeschner 1968; Woodward 1961.
- VELIIDAE: 2 spp., *Microvelia halei* Esaki, 1928: Hale 1926; Esaki 1928; and *M. macgregori* (Kirkaldy, 1899): Kirkaldy 1908.

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#### Books received for review

- Reviews of the 5 books listed below will appear in the next issue of the *N.Z. Entomologist*:
- DAVIES, HOWELL 1977. Tsetse flies in Nigeria: a handbook for junior control staff. 3rd edition. Oxford University Press Nigeria, Ibadan. 340 p. ISBN 0 19 575409 3. Price: NZ\$19.25.
- NATURE CONSERVATION COUNCIL. 1979. A Vanishing Heritage: the problem of endangered species and their habitat. [Government Printer, Wellington.] 273 p. Published by and obtainable from: The Nature Conservation Council, P.O. Box 12-200, Wellington.
- WARE, GEORGE W. 1978. The Pesticide Book. W. H. Freeman, San Francisco; available in New Zealand through N. M. Peryer at \$11.20. ISBN 0 7167 0198 7.
- 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: iii + 176 p. Price: NZ\$11.50, obtainable from: Librarian, Auckland Institute and Museum, Private Bag, AUCKLAND 1, New Zealand.
- YOUDEOWEI, A. 1977. A Laboratory Manual of Entomology. Oxford University Press Nigeria, Ibadan. 208 p. ISBN 0 19 575312 7. Price: NZ\$6.10.