Checklist of the scale insects (Hemiptera: Sternorrhyncha: Coccomorpha) of New Caledonia

Christian MILLE
Institut agronomique néo-calédonien, IAC, Axe 1,
Station de Recherches fruitières de Pocquereux, Laboratoire d'Entomologie appliquée,
BP 32, 98880 La Foa (New Caledonia)
mille@iac.nc

Rosa C. HENDERSON†
Landcare Research, Private Bag 92170 Auckland Mail Centre, Auckland 1142 (New Zealand)

Sylvie CAZÈRES
Institut agronomique néo-calédonien, IAC, Axe 1,
Station de Recherches fruitières de Pocquereux, Laboratoire d'Entomologie appliquée,
BP 32, 98880 La Foa (New Caledonia)
scazeres@iac.nc

Hervé JOURDAN
Institut méditerranéen de Biodiversité
et d'Écologie marine et continentale (IMBE), Aix-Marseille Université,
UMR CNRS IRD Université d'Avignon, UMR 237 IRD,
Centre IRD Nouméa, BP A5, 98848 Nouméa cedex (New Caledonia)
herve.jourdan@ird.fr

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Rosa Henderson† left us unexpectedly on 13th December 2012. Rosa made all our recent coccoid identifications and trained one of us (SC) in Hemiptera Sternorrhyncha slide preparation and identification. The idea of publishing this article was largely hers. Thus we dedicate this article to our late and dear Rosa.
Rosa Henderson† nous a quittés prématurément le 13 décembre 2012. Rosa avait réalisé toutes les récentes identifications de cochenilles et avait formé l'une d'entre nous (SC) à la préparation des Hemiptères Sternorrhynques entre lame et lamelle. Grâce à elle, l'idée de publier cet article a pu se concrétiser. Nous dédicaçons cet article à notre chère et regrettée Rosa.

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ABSTRACT
We provide an up-to-date catalogue of the Coccomorpha Rübsaamen, 1899 of New Caledonia based on studies of collected and curated specimens and on the literature. One hundred and eighteen species (118) in ten families have been recorded to date, in 70 genera. Five of the genera (7.2%) are endemic, belonging to Asterolecaniidae Berlese, 1898 (*Oacoccus* Williams, 2007), Eriococcidae Cockerell, 1899

(*Chazeauana* Matile-Ferrero, 1988, *Choneochiton* Hodgson, 2014) and Monophlebidae Maskell, 1880 (*Insulococcus* Bhatti, 1991, *Tessarobelus* Montrouzier, 1864). Twenty-nine (29) species are endemic to New Caledonia, giving a rate of endemism of 24.6%. Most of the species are apparently human-assisted introductions. We provide here first records from New Caledonia for ten (10) species: *Aulacaspis rosarum* Borchsenius, 1858; *Chrysomphalus pinnulifer* (Maskell, 1891); *Diaspis echinocacti* (Bouché, 1833); *Fiorinia phantasma* (Cockerell & Robinson, 1915); *Labidaspis myersi* Green, 1929; *Palmicultor browni* (Williams, 1960); *Poliaspoides formosana* (Takahashi, 1930); *Pseudococcus gilbertensis* Beardsley, 1966; *Pseudococcus orchidicola* Takahashi, 1939 and *Rhizoecus cacticans* (Hambleton, 1946). Despite two introduction attempts for the biological control of weedy cactus, *Hypogeococcus festerianus* (Lizer y Trelles, 1942) is still considered absent from New Caledonia. Literature records of five species are shown to be erroneous: *Dactylopius tomentosus* (Lamarck, 1801); *Dysmicoccus cocotis* (Maskell, 1890); *Lindingaspis buxtoni* (Laing, 1927); *Nipaecoccus filamentosus* (Cockerell, 1893) and *Clavaspis herculeana* (Cockerell & Hadden, *in* Doane & Hadden, 1909), which are therefore considered absent from New Caledonia.

KEY WORDS
Scales and mealybugs, records, distribution, hosts, pest control, biosecurity.

RÉSUMÉ
Liste annotée des cochenilles (Hemiptera, Sternorrhyncha, Coccomorpha) de Nouvelle-Calédonie.
La mise à jour du catalogue des Coccomorpha Rübsaamen, 1899 de Nouvelle-Calédonie a été réalisée à partir d'études de spécimens en collection et de la bibliographie. Cent dix-huit (118) espèces sont aujourd'hui recensées, réparties en dix familles et 70 genres, dont cinq sont endémiques (7,2 %) parmi les Asterolecaniidae Berlese, 1898 (*Oacoccus* Williams, 2007), Eriococcidae Cockerell, 1899 (*Chazeauana* Matile-Ferrero, 1988, *Choneochiton* Hodgson, 2014) et les Monophlebidae Maskell, 1880 (*Insulococcus* Bhatti, 1991, *Tessarobelus* Montrouzier, 1864). Seules 29 espèces sont endémiques, soit un taux d'endémisme relativement faible de 24,6 %. La plupart des espèces recensées sont apparemment des introductions liées à l'homme. À l'occasion de ce travail, dix (10) espèces sont signalées pour la première fois en Nouvelle-Calédonie : *Aulacaspis rosarum* Borchsenius, 1858 ; *Chrysomphalus pinnulifer* (Maskell, 1891) ; *Diaspis echinocacti* (Bouché, 1833) ; *Fiorinia phantasma* (Cockerell & Robinson, 1915) ; *Labidaspis myersi* Green, 1929 ; *Palmicultor browni* (Williams, 1960) ; *Pseudococcus gilbertensis* Beardsley, 1966 ; *Poliaspoides formosana* (Takahashi, 1930) ; *Pseudococcus orchidicola* Takahashi, 1939 et *Rhizoecus cacticans* (Hambleton, 1946). En dépit de deux tentatives d'introduction comme agent de lutte biologique contre un cactus envahissant, l'espèce *Hypogeococcus festerianus* (Lizer y Trelles, 1942) est toujours considérée comme absente de Nouvelle-Calédonie. La signalisation de cinq espèces mentionnée dans la litérature s'avère erronée : *Dactylopius tomentosus* (Lamarck, 1801) ; *Dysmicoccus cocotis* (Maskell, 1890) ; *Lindingaspis buxtoni* (Laing, 1927) ; *Nipaecoccus filamentosus* (Cockerell, 1893) et *Clavaspis herculeana* (Cockerell & Hadden, *in* Doane & Hadden, 1909) qui sont donc considérées absentes de Nouvelle-Calédonie.

MOTS CLÉS
Cochenilles, signalisations, distribution, hôtes, lutte anti-ravageurs, biosécurité.

INTRODUCTION

Worldwide, the Coccomorpha Rübsaamen, 1899, commonly called scale insects and mealybugs, comprise 52 families, 33 of them extant (Williams & Hodgson 2014). An approximation for the whole group is currently between 7600 to nearly 8000 species (Gullan & Cook 2007 and Macfarlane *et al.* 2010 respectively). It is generally accepted that these taxa are among the most economically significant faunal groups (Ben-Dov *et al.* 2015). They are often considered as insects of quarantine significance because they can be transported easily on commodities such as fresh fruits or ornemental plants and because they can cause significant plant damages, especially in orchards.

Dissemination of exotic phytophagous insects between countries is an expected and significant side-effect of the trade in fresh fruits and vegetables and of tourist travel (Work *et al.* 2005; Hulme 2009). Newly arrived exotic insect species present also new threats to native flora and fauna as well as to agriculture that can result in significant restrictions in export trade (Batabyal & Beladi 2006); thus the continuation and necessary extension of international trade and travel depends on sound and scientifically-based phytosanitary protocols. It is therefore important to establish a comprehensive list of this faunal group of major agricultural pests because it frequently presents economic barriers for fresh commodity exports. These protocols must rely on accurate and up-to-date pest species lists and catalogues, which also are essential for pest control research programs, especially for Integrated Pest Management (IPM) including biological control. Such lists also provide tools for biosecurity policies and managers (Charles & Henderson 2002; Beauvais *et al.* 2006). This is a particularly major issue for islands, where such introductions may have higher impacts and more serious ecological consequences. The present catalogue focuses on the recently accepted infraorder Coccomorpha, which encompasses the scale insects (Williams & Hodgson 2014). Coccomorpha belong to the order Hemiptera, suborder Sternorrhyncha (the paraphyletic group "Homoptera" having been abandoned [Gullan 2001]).

The information on New Caledonian Coccomorpha available in the literature is incomplete and scattered. Early workers who studied the scales and mealybugs of New Caledonia were: Perroud & Montrouzier (1864), Lindinger (1911), Laing

(1933), Risbec (1942) and Cohic (1956, 1958a, 1958b, 1959a, 1959b). The latter author made the first comprehensive list of Coccomorpha of New Caledonia with annotations about their hosts, economic or environmental impacts and associated biological control agents. Subsequent contributions were the two pest catalogues made by Brun & Chazeau (1980, 1986) who updated lists of Coccomorpha, among other agricultural pests. A more recent, large contribution on the New Caledonian Coccomorpha fauna was within the three volumes by Williams & Watson (1988a, 1988b, 1990), on Diaspididae (Targioni-Tozzetti, 1868), Pseudococcidae Heymons, 1915, Coccidae Stephens, 1829 and other minor families respectively. Several other works recorded some new species or new distribution information for various species (Matile-Ferrero & Balachowsky 1973; Matile-Ferrero 1988; Williams *et al.* 2006; Williams 2007; Kianek *et al.* 2007; Hodgson *et al.* 2008, 2014; Mille *et al.* 2012). Contributions on the biological control of Coccomorpha were mostly made by Fabres (1974, 1977, 1979).

MATERIAL AND METHODS

The essential data of this work were compiled from scattered scientific litterature, checklists and catalogues including the ScaleNet Database (Ben-Dov *et al.* 2015). The present catalogue was also developed from studies of curated specimens in the New Caledonian Invertebrate Reference Collection – Xavier Montrouzier (CXMNC) at the Institut agronomique néo-Calédonien (IAC) in La Foa, the Muséum national d'Histoire naturelle (MNHN) in Paris, and the New Zealand Arthropod Collection (NZAC) at Landcare Research in Auckland.

This updated and annoted checklist summarises all recorded species from New Caledonia (the mainland called Grande Terre) and adjacent inhabited islands (the Loyalty Islands, Belep Archipelago and Île des Pins) as well as remote island groups such as the Chesterfield atolls or Walpole Island. Each represented family is listed in alphabetical order. After each family name, the number of species found in New Caledonia is given in brackets. The current valid species names are then listed alphabetically. For each species, its original name of description, with author, year and the page of description is also given; geographic distributions are referenced from the ScaleNet database (Ben-Dov *et al.* 2015). Reference records of the species in New Caledonia, host plants from reference records and local observations, biological control agents recorded in New Caledonia and observations on local distributions and economic importance are also given. Endemic species are followed by an asterisk, or by a double asterisk when the genus is also endemic.

ABBREVIATIONS

coll. collector;
det. determinator.

Depositories

CXMNC New Caledonia Invertebrate Reference Collection – Xavier Montrouzier, Institut agronomique néo-Calédonien, La Foa, New Caledonia;
MNHN Muséum national d'Histoire naturelle, Paris;
NZAC New Zealand Arthropod Collection, Landcare Research, Auckland.

Collection sites

IAC Institut agronomique néo-calédonien;
SRFP Station de Recherches fruitières de Pocquereux, La Foa, New Caledonia;
IAC, SRMH Station de Recherches maraîchères et horticoles, Mont-Dore, New Caledonia.

RESULTS

Family ASTEROLECANIIDAE Berlese, 1898
(3 species, 2 endemic)
Genus *Bambusaspis* Cockerell, 1902

Bambusaspis bambusae (Boisduval, 1869)

Asterolecanium bambusae Boisduval, 1869: 261.

PUBLISHED RECORDS IN NEW CALEDONIA. — Cohic (1956, 1958a).

DISTRIBUTION IN NEW CALEDONIA. — Lack of precise localities in relevant literature.

HOST-PLANTS IN NEW CALEDONIA. — *Bambusa* sp. (Cohic 1956, 1958a).

OTHER RECORDS. — Cosmopolitan. Mainly on Poaceae, but also found living on Caryophyllaceae, Cupressaceae, Ebenaceae, Euphorbiaceae, Lauraceae, Myrtaceae and Orchidaceae.

NOTE. — Occasionally causes heavy damage locally in New Caledonia.

Genus *Oacoccus* Williams, 2007*

Oacoccus nothofagi Williams, 2007**

Oacoccus nothofagi Williams, 2007: 1348.

PUBLISHED RECORDS IN NEW CALEDONIA. — Williams (2007).

DISTRIBUTION IN NEW CALEDONIA. — Grande Terre (Mont Do, 1000 m, Boulouparis County) (Williams 2007).

HOST-PLANTS IN NEW CALEDONIA. — *Nothofagus codonendra*.

NOTES. — On twigs and woody petioles (Williams 2007). It is only known from montane forest.

Genus *Russellaspis* Bodenheimer, 1951

Russellaspis pustulans (Cockerell, 1892)

Asterodiaspis pustulans Cockerell, 1892: 143.

PUBLISHED RECORDS IN NEW CALEDONIA. — Russell (1941) *in* Williams & Watson (1990).

DISTRIBUTION IN NEW CALEDONIA. — Isle of Pines.

HOST-PLANTS IN NEW CALEDONIA. — *Grevillea robusta* (Russell 1941) and *Nerium oleander* (Brun & Chazeau 1986).

Other records. — South America, Pacific Ocean, Australasia, Micronesia, Indian Ocean, Central Pacific.

Family Coccidae Fallén, 1814
(16 species)
Genus *Ceroplastes* Gray, 1828

Ceroplastes ceriferus (Fabricius, 1798)

Coccus ceriferus Fabricius, 1798: 546.

Material examined. — One specimen from Loyalty Islands (Maré), 2003, on avocado tree (*Persea americana*), C. Mille coll., Rosa C. Henderson det. (NZAC).

Published records in New Caledonia. — Cohic (1956, 1958a).

Distribution in New Caledonia. — Loyalty Islands (Maré) and Grande Terre.

Host-plants in New Caledonia. — On roots of *Ficus* spp. in Loyalty Islands (Maré) (Williams & Watson 1990); *Alstonia lanceolata*, *Citrus* spp.; *Pteridium aquilinum* (Cohic 1956, 1958a); *Montrouziera* spp. (Brun & Chazeau 1984); *Melaleuca quinquenervia* (Brun & Chazeau 1986) and *Persea americana* (Mille 2011).

Other records. — Cosmopolitan.

Note. — Quite rare in New Caledonia, not rated as an economic species to date.

Ceroplastes destructor Newstead, 1917

Ceroplastes destructor Newstead, 1917: 26.

Material examined. — Païta County, 3.IX.2004, on twigs of *Argophyllum* sp., C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC); La Foa County (IAC, SRFP, Pocquereux Fruit Research Station), 21.VIII.2007, on *Cupaniopsis* sp., J. Brinon coll., Rosa C. Henderson det. (NZAC, CXMNC); Belep Archipelago (Art Island, Plateau Nord), on an unknown plant, 27.VIII.2009, C. Mille coll., S. Cazères det. (CXMNC); Mont-Dore County (Plum, Col du Crève-Coeur), 19.II.2013, on the twigs of an unknown plant, H. Jourdan coll.; Pouembout County (Tiea), on twigs of *Maytenus fournieri*, 11.III.2013, S. Lebegin & B. Naré coll., S. Cazères det. (CXMNC).

Published records in New Caledonia. — Mille (2011).

Distribution in New Caledonia. — Grande Terre (Païta, La Foa, Mont-Dore, Pouembout counties, Belep Archipelago).

Host-plants in New Caledonia. — *Annona* spp., *Citrus* spp., *Mangifera indica*, *Persea americana*, *Psidium* spp. (Mille 2011).

Other records. — Australasia, Africa, South-East Asia, Indian Ocean.

Note. — Apparently a recent arrival as it was not recorded in previous catalogues. Not rated as an economic species; very rare.

Ceroplastes floridensis Comstock, 1881

Ceroplastes floridensis Comstock, 1881: 331.

Published records in New Caledonia. — Mille (2011).

Distribution in New Caledonia. — Grande Terre.

Host-plants in New Caledonia. — *Citrus* spp., *Melaleuca quinquenervia* (Mille 2011).

Other records. — Almost cosmopolitan.

Note. — Quite rare, not rated as an economic pest in New Caledonia.

Ceroplastes rubens Maskell, 1893

Ceroplastes rubens Maskell, 1893: 214.

Material examined. — Loyalty Islands (Maré, Médu), 10.XI.2000, on leaves and twigs of *Persea americana*, C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC); La Foa County (IAC, SRFP), 2000, on *Mangifera indica*, C. Mille coll., Rosa C. Henderson det. (NZAC); same loc., 16.IV.2002, on leaves of *M. indica*, S. Cazères coll., det. (CXMNC).

Published records in New Caledonia. — Cohic (1950, 1956, 1958a).

Distribution in New Caledonia. — Almost everywhere.

Host-plants in New Caledonia. — *Citrus* spp., *Melaleuca quinquenervia*, *Montrouziera* spp., *Montrouziera cauliflora*, *Syzygium cumini* (Williams & Watson 1990), *Annona* spp., *Cocos nucifera*, *Mangifera indica*, *Musa* spp., *Pyrus communis* (Risbec 1942), *Persea americana* (Cohic 1950), *Agathis lanceolata*, *Calophyllum inophyllum*, *Cycas* spp., *Ficus* spp., *Hibiscus rosa-sinensis*, *Lagerstroemia indica*, *Platycerium* spp., *Psidium* spp. (Cohic 1958a), *Gerbera* spp., *Plumeria acuminata* (Brun & Chazeau 1980).

Other records. — Australasia, South-East Asia, equatorial north-eastern and southern Africa, Far East, Pacific Ocean, Micronesia, Indian Ocean, Central Pacific.

Biological agents. — *Moranila californica* (Embleton, 1902) (Hymenoptera: Pteromalidae) (Cohic 1958a); *Encyrtus infelix* (Embleton, 1902) (Hymenoptera: Encyrtidae); *Scutellista caerulea* (Fonscolombe, 1832) (Hymenoptera: Pteromalidae) (Mille 2011).

Notes. — One of the commonest scale species in New Caledonia, it is of environmental and economic significance as it can be found in many eco- and agrosystems. It can be seen in large areas on stands of *Melaleuca quinquenervia*, associated with invasive ants that probably counteract the action of parasitoids, and also with large quantities of sooty mould (Kohler & Pellegrin 1992).

Genus *Coccus* Linnaeus, 1758

Coccus hesperidum Linnaeus, 1758

Coccus hesperidum Linnaeus, 1758: 455.

Material examined. — Loyalty Islands (Maré, Médu), 10.XI.2000, on leaves and twigs of *Persea americana*, C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC); La Foa County (IAC, SRFP), 2.X.2002, on *Ficus carica*, S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC); Bourail County (Gouaro), 12.X.2002, on roots of *Cucurbita* spp., S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC); Mont-Dore County (IAC, SRMH), 12.X.2002, on leaves of *Oxera nerifolia*, G. Gâteblé coll., Rosa C. Henderson det. (NZAC, CXMNC); Cherterfield Islands (Île Longue), 6.XI.2012, on *Heliotropium foertherianum*, H. Jourdan & E. Bourguet coll., Christopher Hodgson det. (CXMNC).

Published records in New Caledonia. — Williams & Watson (1990) noted that it was already present in 1928, when it was collected by Cockerell.

Distribution in New Caledonia. — Loyalty Islands (Maré), Grande Terre (La Foa, Bourail, Mont-Dore counties) and Cherterfield Islands.

Host-plants in New Caledonia. — *Carica papaya*, *Citrus* spp., *Cucurbita* spp., *Ficus carica*, Orchids (Williams & Watson 1990), *Persea americana* (Mille 2011), recently found on *Oxera nerifolia* and on *Heliotropium foertherianum*.

Other records. — Almost cosmopolitan.

Biological agents. — *Encyrtus infelix* (Hymenoptera: Encyrtidae), *Scutellista caerulea* (Hymenoptera: Pteromalidae), and the entomopathogenic fungus *Lecanicillium lecanii* (Fungi, Hypocreales, Cordycipitaceae).

Note. — Can be a problem locally and sporadically.

Coccus longulus (Douglas, 1887)

Lecanium longulum Douglas, 1887: 97.

Material examined. — La Foa County (IAC, SRFP), 25.XIII.2003, on leaves and twigs of *Carya illinoinensis* (Pecan nut), S. Cazères coll., Rosa C. Henderson det. (NZAC); same loc., 2.XI.2009, on twigs of grapevine, S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — Williams & Watson (1990) noted that it was already present in 1928, when it was collected by Cockerell.

Distribution in New Caledonia. — Grande Terre (La Foa County).

Host-plants in New Caledonia. — *Annona muricata*, *A. reticulata*, *A. squamosa*, *Averrhoa carambola*, *Citrus* spp., *Codiaeum* spp., *Ficus* spp., *Litchi chinensis*, *Malvaviscus arboreus* and *Persea americana* (Cohic 1956), recently found on *Vitis vinifera* and on *Carya illinoinensis*.

Other records. — Almost cosmopolitan, but absent from North and South America.

Biological agents. — *Cryptolaemus montrouzieri* (Coleoptera: Coccinellidae) and the entomophagous fungus *Lecanicillium lecanii* (Fungi, Hypocreales, Cordycipitaceae).

Note. — Quite rare in New Caledonia.

Coccus viridis (Green, 1889)

Lecanium viride Green, 1889: 248.

Material examined. — Bourail County (Gouaro), 4.IV.2002, on fruits of *Annona squamosa*, S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC); same loc., 28.IV.2002, on leaves and twigs of *Citrus* spp., S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC); Voh County (Mont Katepahié), 29.X.2009, on *Dodonaea viscosa*, S. Cazères coll., Rosa C. Henderson det. (CXMNC); Koumac County (Tiébaghi Mining Plant), 6.III.2013, on leaves of an unidentified Sapotaceae, H. Jourdan coll., S. Cazères det. (CXMNC).

Published records in New Caledonia. — Cohic (1958a).

Distribution in New Caledonia. — Grande Terre (Bourail, Voh and Koumac counties).

Host-plants in New Caledonia. — *Annona squamosa*, *Citrus* spp., *Coffea* spp., *Ficus* spp., *Gardenia* spp., *Gerbera jamesoni* (Cohic 1958a), *Nerium oleander*, *Plumeria acuminata* (Brun & Chazeau 1986), *Litchi chinensis*, *Psidium guajava* (Mille 2011), recently found on *Dodonaea viscosa*.

Other records. — Almost cosmopolitan.

Biological agents. — *Cryptolaemus montrouzieri* Mulsant, 1853 (Coleoptera: Coccinellidae).

Notes. — This species is an important problem on young trees, and is a regulated quarantine insect on commodities (especially litchees and limes) for export to Japan and New Zealand, as its detection at their borders can lead to fruit shipment rejection or even destruction.

Genus *Eucalymnatus* Cockerell *in* Cockerell & Parrott, 1901

Eucalymnatus tessellatus (Signoret, 1874)

Lecanium tessellatus Signoret, 1874: 401.

Material examined. — La Foa County (IAC, SRFP), 20.VIII.2002, on leaves of *Mangifera indica*, C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC); same loc. and date, on leaves of *Caryota mitis*, S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC); La Foa County (Nili), 2.XII.2006, on leaves of *Dypsis* sp. (Arecaceae), C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — Cohic (1958a); Williams & Watson (1990) noted that it was collected "before 1929".

Distribution in New Caledonia. — Grande Terre (La Foa County).

Host-plants in New Caledonia. — *Aleurites moluccana*, *Alocasia macrorrhiza*, *Calophyllum inophyllum*, *Canna indica*, *Cocos nucifera*, *Ficus* spp., *Latania commersonii*, *Oreodoxa regia*, *Scaevola frutescens* (Cohic 1958a). It was recently found on *Citrus* spp., *Ficus carica*, *Caryota mitis* and other Arecaceae, *Mangifera indica*, *Musa sapientum* and *Theobroma cacao* (Mille 2011).

Other records. — Almost cosmopolitan.

Note. — Rated as a non-economic species in New Caledonia.

Genus *Kilifia* De Lotto, 1965

Kilifia acuminata (Signoret, 1873)

Lecanium acuminatum Signoret, 1873: 397.

Published records in New Caledonia. — Cohic (1956, 1958a).

Distribution in New Caledonia. — Grande Terre.

Host-plants in New Caledonia. — *Santalum austrocaledonicum* (Cohic 1956, 1958a), *Annona reticulata*, *Citrus* spp., *Codiaeum variegatum*, *Persea americana* (Brun & Chazeau 1986).

Other records. — Almost cosmopolitan

Note. — Quite rare in New Caledonia.

Genus *Milviscutulus* Williams & Watson, 1990

Milviscutulus mangiferae (Green, 1889)

Lecanium mangiferae Green, 1889: 249.

Published records in New Caledonia. — Cohic (1958a).

Distribution in New Caledonia. — Dry parts of the West Coast of Grande Terre.

Host-plants in New Caledonia. — *Ananas comosus*, *Artocarpus* spp., *Litchi chinensis*, *Mangifera indica*, *Persea americana*, *Psidium guajava* (Mille 2011).

Other records. — Almost cosmopolitan.

Note. — Not rated as an economic species.

Genus *Parasaissetia* Takahashi, 1955

Parasaissetia nigra (Nietner, 1861)

Lecanium nigrum Nietner, 1861: 9.

Material examined. — Bourail County (Gouaro), 9.IX.2001, on twigs of *Hibiscus rosa-sinensis*, S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC); Sarraméa County, 20.X.2002, on *Ananas comosus*, C. Mille coll., Rosa C. Henderson det. (NZAC); La Foa County (IAC, SRFP), 20.XI.2002, on *Psidium guajava*, J. Brinon coll., Rosa C. Henderson det. (NZAC, CXMNC); the species was also intercepted from Tahiti, 3.XII.2012, on twigs of *H. rosa-sinensis*, E. Béné coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — Cohic (1956, 1958a).

Distribution in New Caledonia. — Grande Terre (Bourail and Sarraméa counties).

Host-plants in New Caledonia. — *Coffea arabica*, *C. canephora*, *Ficus* spp. (Cohic 1956, 1958a), *Annona muricata*, *Helianthus annuus*, *Nerium oleander*, *Solanum melongena*, *Dioscorea* spp., *Gossypium* spp., *Hibiscus rosa-sinensis* (Brun & Chazeau 1980), also found on *Ananas comosus*, *Citrus* spp., *Persea americana*, *Psidium guajava* (Mille 2011).

Other records. — Almost cosmopolitan.

Biological agents. — *Encyrtus infelix* (Hymenoptera: Encyrtidae), *Scutellista caerulea* (Hymenoptera: Pteromalidae) and *Lecanicillium lecanii* (Zimm.) Zare & W.Gams (2001) (Fungi, Hypocreales, Cordycipitaceae).

Note. — Not rated as an economic species.

Genus *Pulvinaria* Targioni-Tozzetti, 1867

Pulvinaria psidii Maskell, 1893

Pulvinaria psidii Maskell, 1893: 223.

Material examined. — La Foa County (IAC, SRFP), 3.I.2002, on leaves of *Litchi chinensis*, C. Mille coll., Rosa C. Henderson det. (NZAC); same loc., 4.IV.2002, on *Carissa macrocarpa*, S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC); Mont-Dore County (IAC, SRMH), 10.IV.2007, on leaves and twigs of *Oxera* spp., S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC); same loc. & date, on leaves and twigs of *Pycnandra* sp., S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC); Poya County (Beaupré), 31.V.2007, on leaves and twigs of *Eugenia bullata*, C. Mille & S. Cazères coll., Rosa C. Henderson det. (NZAC); La Foa County (IAC, SRFP), 17.X.2008, on leaves of *L. chinensis*, C. Mille coll., Rosa C. Henderson det. (NZAC).

Published records in New Caledonia. — Cohic (1956, 1958a).

Distribution in New Caledonia. — Grande Terre (La Foa, Mont-Dore and Poya counties).

Host-plants in New Caledonia. — *Citrus* spp., *Coffea* spp., *Eucalyptus deglupta*, *Eugenia* spp., *Litchi chinensis*, *Mangifera indica*, *Morinda citrifolia*, *Plumeria acuminata*, *Psidium* spp., *Schinus terebinthifolius*, *Spathodea campanulata*, *Syzygium* spp. (Brun & Chazeau 1986; Williams & Watson 1990), recently collected on *Carissa macrocarpa*, *Oxera* spp. and *Pycnandra* sp.

Other records. — Almost cosmopolitan.

Biological agents. — *Cryptolaemus montrouzieri* (Coleoptera: Coccinellidae) and several species of Chrysopidae (Neuroptera).

Notes. — According to Cohic (1958a), this species and *Ceroplastes rubens* were the two soft scale insect species most associated with production of sooty mould growing on their honeydew, especially on *Plumeria* and guava trees.

Pulvinaria urbicola Cockerell, 1893

Pulvinaria urbicola Cockerell, 1893: 160.

Material examined. — Boulouparis County (Bouraké), 12.X.2007, on *Acanthocereus tetragonus*, H. Jourdan coll., Rosa C. Henderson det. (NZAC); Chesterfield Islands (Île Longue), 6.XI.2012, on tubercule of *Boerhavia diffusa*, H. Jourdan coll. & E. Bourguet, Rosa C. Henderson det. (CXMNC).

Published records in New Caledonia. — Brun & Chazeau (1986); Williams & Watson (1990).

Distribution in New Caledonia. — Grande Terre (Boulouparis County) and Chesterfield Islands.

Host-plants in New Caledonia. — Brun & Chazeau (1986) recorded it from *Citrus* spp., *Plumeria acuminata* and *Psidium* spp., also, it was recently found in 2007 on *Acanthocereus tetragonus* (in Bouraké, Boulouparis County) and *Psidium guajava*.

Other records. — West Indies, Australasia, North and Central America, Pacific Ocean, Middle East, Micronesia, Central Pacific.

Note. — A rare species in New Caledonia.

Genus *Saissetia* Deplanche, 1859

Saissetia coffeae (Walker, 1852)

Lecanium coffeae Walker, 1852: 1079.

Material examined. — La Foa County (IAC, SRFP), 19.II.2002, on twigs of *Citrus* sp., C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC); same loc., 20.VIII.2002, on leaves of *Citrus* sp., C. Mille coll., Rosa C. Henderson det. (NZAC); Poya County, 17.II.2005, on leaves of *Ixora collina*, C. Mille coll., Rosa C. Henderson det.

(NZAC, CXMNC); La Foa County (Nili), 2.XII.2006, on leaves of *Cycas revoluta*, C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC); same loc., 11.VIII.2008, on leaves of *C. revoluta*, C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC); Koumac County (Tiébaghi Mining Plant), 6.III.2013, on twigs of *Eugenia* cf *stricta*, H. Jourdan coll., S. Cazères det. (CXMNC).

Published records in New Caledonia. — Cohic (1956, 1958a).

Distribution in New Caledonia. — Grande Terre (La Foa, Poya and Koumac counties).

Host-plants in New Caledonia. — Polyphagous, *Aristolochia* spp., *Calophyllum inophyllum*, *Citrullus vulgaris*, *Citrus* spp., *Coffea* spp., *Cucurbita pepo*, *Erythrina* spp., *Gardenia* spp., *Gossypium* spp., *Hibiscus tilliaceus*, *Luffa* spp., *Orchis* spp., *Mangifera indica*, *Persea americana*, *Pseuderanthemum* spp., *Sesbania grandiflora*, *Solanum melongena* (Brun & Chazeau 1986), recently collected on *Ixora collina*, *Eugenia* cf *stricta*, and on *Cycas revoluta* in large infestations on old leaves.

Other records. — Almost cosmopolitan.

Biological agents. — *Encyrtus infelix* (Hymenoptera: Encyrtidae), *Scutellista caerulea* (Hymenoptera: Pteromalidae), *Cryptolaemus montrouzieri* (Coleoptera: Coccinellidae) and *Lecanicillium lecanii* (Fungi, Hypocreales, Cordycipitaceae).

Notes. — Among *Saissetia* spp., this is the commonest in New Caledonia. According to Cohic (1958a), despite its polyphagous diet, this species is maintained under economic thresholds by *Scutellista caerulea* (Hymenoptera, Pteromalidae).

Saissetia miranda (Cockerell & Parrott, 1899)

Lecanium oleae mirandum Cockerell & Parrott, *in* Cockerell, 1899: 12.

Published records in New Caledonia. — Williams & Watson (1990) listed material collected in 1904.

Distribution in New Caledonia. — West Coast of Grande Terre.

Host-plants in New Caledonia. — *Ficus* spp.

Other records. — North and South America, West Indies, Pacific Ocean, South-East Asia, Australasia, South Europe, southern Africa.

Note. — An uncommon species which has not been found again since the first record.

Saissetia oleae (Olivier, 1791)

Coccus oleae Olivier, 1791: 95.

Material examined. — La Foa County (Nili), 11.VIII.2008, on roots of an unknown plant, C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — Cohic (1956, 1958a).

Distribution in New Caledonia. — Grande Terre (La Foa County).

Host-plants in New Caledonia. — *Annona* spp., *Citrus* spp., *Erythrina* spp., *Ficus* spp., *Musa sapientum*, *Olea europea* (Mille 2011).

Other records. — Almost cosmopolitan.

Biological agents. — *Encyrtus infelix* (Hymenoptera: Encyrtidae), *Scutellista caerulea* (Hymenoptera: Pteromalidae), *Cryptolaemus montrouzieri* (Coleoptera: Coccinellidae).

Note. — Not rated as a harmful pest species. According to Cohic (1958a), this species was the rarest amongst the *Saissetia* species in New Caledonia.

Family Conchaspididae Green, 1896
(1 exotic species)
Genus *Conchaspis* Cockerell, 1893

Conchaspis angraeci Cockerell, 1893

Conchaspis angraeci Cockerell, 1893: 9.

Material examined. — Tiga Island, 22.III.2012, on leaves of *Vanilla* sp., J.-P. Lolo coll., Rosa C. Henderson det. (NZAC, CXMNC); Loyalty Islands (Maré), 3.IV.2013, on leaves of *Vanilla* sp., J. Drouin coll., S. Cazères det. (CXMNC); Nouméa County (Quartier Ouémo-Magenta), 30.VII.2014, on leaves of *Vanilla* sp., N. Hugot coll., S. Cazères det. (CXMNC).

Published records in New Caledonia. — Mille *et al.* 2012.

Distribution in New Caledonia. — Loyalty Islands and Grande Terre.

Host-plants in New Caledonia. — Highly polyphagous; this species is hosted by 25 botanical families (Ben-Dov 2012c).

Other records. — Angola, Australia, Brazil, Cameroon, Bermuda, Barbados, Cuba, Ecuador, Fiji Islands, French Polynesia, La Réunion, Malaysia, Mauritius, Mayotte, Mexico, Nicaragua, Panama, Peru, Puerto-Rico, Surinam, Trinidad and Tobago, Tuvalu, USA, and Venezuela.

Biological agents. — Unknown.

Note. — This recently established species appears to be a major threat to New Caledonian *Vanilla*.

Family Dactylopiidae Signoret, 1875
(1 exotic species)
Genus *Dactylopius* Costa, 1835

Dactylopius opuntiae (Cockerell, 1896)

Coccus cacti opuntiae Cockerell, 1896: 35.

Material examined. — Moindou County (Teremba), 20.VI.2001, on leaves of *Opuntia ?ficus-indica* (Prickly Pear, *"Figuier de Barbarie"*), J-P. Kataoui coll., Rosa C. Henderson det. (NZAC, CXMNC); Boulouparis County (Îlot Daussy), 8.VIII.2009, on leaves of *Opuntia* spp., H. Jourdan coll., Rosa C. Henderson det. (NZAC).

Published records in New Caledonia. — Williams & Watson (1990).

Distribution in New Caledonia. — Grande Terre (Boulouparis and Moindou counties).

Host-plants in New Caledonia. — *Opuntia* spp. (Cochereau & Mille, 2008).

Other records. — Australasia, Central Europe, West Indies, Indian Ocean, Central and South America, southern Africa, South-East Asia, central Pacific.

Note. — For more information, see below the section "Erroneous records from New Caledonia".

Family Diaspididae Targioni-Tozzetti, 1868
(50 species, 9 endemic)
Genus *Agrophaspis* Borchsenius & Williams, 1963

Agrophaspis buxtoni (Laing, 1933)*

Aonidia buxtoni Laing, 1933: 676.

Published records in New Caledonia. — Cohic (1958a), Borschenius & Williams (1963).

Distribution in New Caledonia. — First found in La Tontouta (Païta County), in June 1925 (Borschenius & Williams 1963). West Coast of Grande Terre.

Host-plants in New Caledonia. — On unknown Cyperaceae and "switch grass" (*Panicum virgatum*?).

Note. — This endemic species is quite rare.

Genus *Aonidiella* Berlese & Leonardi, 1895

Aonidiella aurantii (Maskell, 1879)

Aspidiotus aurantii Maskell, 1879: 199.

Material examined. — La Foa County (Nili), 4.IV.2005, on leaves of *Cycas* spp.; same loc., 11.VIII.2008, on leaves of *C. revoluta*, both C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — Cohic (1956, 1958a).

Distribution in New Caledonia. — Grande Terre (La Foa County).

Host-plants in New Caledonia. — Polyphagous, but prefers *Citrus* spp. (including all species and cultivars). Also known on *Cycas* spp. and *Musa* spp. (Cohic 1956). It can be also observed on *Annona* spp., *Passiflora* spp. (Mille 2011) and *Rosa* spp. (Cohic 1958a).

Other records. — Occurs in most *citrus*-growing areas of the world.

Biological agents. — *Aphytis chrysomphali* Mercet, 1912; *A. lignanensis* Compere, 1955 (Hymenoptera: Aphelinidae) and *Compariella bifasciata* Howard, 1906 (Hymenoptera: Encyrtidae).

Notes. — The California Red Scale in New Caledonia probably originated from infested *Citrus* fruits imported from Australia. This species is a major economic pest in *Citrus* orchards, associated with leaf discoloration, branch die-back and fruit infestation.

Genus *Aonidia* Targioni-Tozzetti, 1868

Aonidia longa Lindinger, 1911*

Aonidia longa Lindinger, 1911: 172.

Published records in New Caledonia. — Lindinger (1911).

Distribution in New Caledonia. — This species is only known from its type series, collected on Mont Humboldt in humid forest (Grande Terre).

Host-plants in New Caledonia. — *Podocarpus gnidioides* (Lindinger 1911).

Note. — This taxon requires taxonomic revision, as it does not seem to match the characters of *Aonidia Targioni-Tozzetti,* 1868 as presently understood (Williams & Watson 1988a).

Genus *Aspidiella* Leonardi, 1898

Aspidiella hartii (Cockerell, 1895)

Aspidiotus hartii Cockerell, 1895: 7.

Material examined. — La Foa County (Pocquereux Valley), 18.X.2006, on tubercules of *Dioscorea* spp., C. Mille coll., Rosa C. Henderson det. (NZAC); Loyalty Islands (Maré) (Hnahneice), on tubercules of *Dioscorea* ?*alata*, 10.07.2013, S. Tron coll., S. Cazères det. (CXMNC); Lifou Island, same host, 23.VIII.2013, S. Tron coll., S. Cazères det. (CXMNC).

Published records in New Caledonia. — Cohic (1956, 1958a).

Distribution in New Caledonia. — Everywhere.

Other records. — Australasia, West Indies, Pacific Ocean, Western Africa, South-East Asia, Indian Ocean, Micronesia, North America.

Host-plants in New Caledonia. — *Dioscorea* spp. (Yam).

Notes. — Can be a problem on yam cuttings during conservation and before planting. Cohic (1958a) noted that it was only known from the Isle of Pines and Loyalty Islands, but today it is widespread within the whole archipelago, most likely due to numerous exchanges of yam cuttings for planting and during traditional customary ceremonies.

Genus *Aspidiotus* Bouché, 1833

Aspidiotus cochereaui
Matile-Ferrero & Balachowsky, 1973*
(Fig. 5A, B)

Aspidiotus cochereaui Matile-Ferrero & Balachowsky, 1973: 241.

Material examined. — Boulouparis County (Mont Do), on *Dracophyllum* spp., 13.IV.2006; Thio County (Mont Kouakoué), same host, 17.III.2008; both C. Mille coll., det. RCH, dep. NZAC, CXMNC.

Published records in New Caledonia. — Matile-Ferrero & Balachowsky (1973).

Distribution in New Caledonia. — This species is only known from humid forests in the Central Range of Grande Terre, Mont Do and Kouakoué.

Host-plants in New Caledonia. — On *Nothofagus codonandra* (Williams & Watson 1988a) and *Dracophyllum* spp.

Aspidiotus destructor Signoret, 1869

Aspidiotus destructor Signoret, 1869: 120.

Material examined. — La Foa County (IAC, SRFP), on fruit of *Annona cherimola*, 24.VI.2002, J.-P. Kataoui coll.; La Foa County (Nili), on leaves of *Olea europea*, 1.VII.2008, C. Mille coll.; both Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — Brun & Chazeau (1984).

Distribution in New Caledonia. — West Coast of Grande Terre.

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Annona* spp., *Artocarpus* spp., *Carica papaya*, *Citrus* spp., *Mangifera indica*, *Musa sapientum*, *Passiflora* spp., *Persea americana*, *Prunus persica*, *Psidium guajava*, *Vitis vinifera* (Mille 2011), this species occurs also on olive trees (*Olea europea*), coconut (*Cocos nucifera*) and other palms (Arecaceae).

Biological agents. — Predated by *Rhizobius satelles* Blackburn, 1892; *Chilocorus nigritus* (Fabricius, 1798) (Coleoptera: Coccinellidae) and parasitized by *Comperiella bifasciata* (Hymenoptera: Encyrtidae).

Notes. — This species is a relatively recent introduction (less than 30 years ago). Cohic (1958a) stated that it was a misidentification of the invalid species "*Aspidiotus hederae* (Vallot)" (Ben Dov & Matile-Ferrero 1999) by Risbec (1942), the latter species being *A. nerii* described below. As the record was an addendum of the first edition of the Brun & Chazeau's catalogue in 1980, this means that *A. destructor* probably arrived during the early 1980s. Not rated as an economic pest in New Caledonia.

Aspidiotus nerii Bouché, 1833

Aspidiotus nerii Bouché, 1833: 52.

Material examined. — Poya County, on leaves and twigs of *Ixora collina*, 17.II.2005, C. Mille coll., Rosa C. Henderson det. (NZAC).

Published records in New Caledonia. — Williams & Watson (1988a); Cohic (1956, 1958a).

Distribution in New Caledonia. — West Coast of Grande Terre.

Other records. — Cosmopolitan.

Host-plants in New Caledonia. — *Ananas comosus*, *Cocos nucifera*, *Musa sapientum*, *Pandanus* spp., *Plumeria* spp. (Cohic 1958a), *Nerium oleander* (Brun & Chazeau 1986), *Citrus* spp., *Mangifera indica*, *Vitis vinifera* (Williams & Watson 1988a; Mille 2011) and *Ixora collina*.

Biological agents. — The entomopathogenic fungus *Septobasidium* sp. (Fungi, Basidiomycota, Septobasidiaceae) (Cohic 1956) and the parasitoid *Encarsia citrina* (Crawford, 1891) (Hymenoptera: Aphelinidae) (Cohic 1958a).

Note. — The species has been known from New Caledonia since 1899 and is presently not rated as an economic species.

Genus *Aulacaspis* Cockerell, 1836

Note. — Because of unclear taxonomy in the past and then further confusion among the three recorded *Aulacaspis* species, a re-assessment of the species in New Caledonia would be necessary.

Aulacaspis rosae (Bouché, 1834)

Aspidiotus rosae Bouché, 1834: 53.

Material examined. — La Foa County (Méaré), on *Rosa* sp., 15.XII.2005, C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — Cohic (1956, 1958a); Watson (2002); Miller & Davidson (2005).

Distribution in New Caledonia. — Grande Terre (La Foa County).

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Rosa* spp.

Note. — Observed at higher altitudes, in the contrast to the other introduced *Aulacapsis* species (Cohic 1958a). Not rated as an economic species.

Aulacaspis rosarum Borchsenius, 1958

Aulacaspis rosarum Borchsenius, 1958: 165.

Material examined. — La Foa County (Méaré), 15.XII.2005, on *Rosa* sp., C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — This is the first record from New Caledonia.

Distribution in New Caledonia. — Grande Terre (La Foa County).

Other records. — Australasia, South-East Asia, Pacific Ocean, North America.

Host-plants in New Caledonia. — *Rosa* spp.

Aulacaspis sumatrensis Green, 1930

Aulacaspis sumatrensis Green, 1930: 292.

Published records in New Caledonia. — Brun & Chazeau (1980); Williams & Watson (1988a).

Distribution in New Caledonia. — No precise localities

Other records. — Australasia, South-East Asia, Pacific Ocean.

Host-plants in New Caledonia. — *Cocos nucifera* and other Arecaceae.

Note. — An uncommon species in New Caledonia.

Aulacaspis tubercularis Newstead, 1906

Aulacaspis tubercularis Newstead, 1906: 73.

Published records in New Caledonia. — Cohic (1956, 1958a); Brun & Chazeau (1986); Miller & Davidson (2005).

Distribution in New Caledonia. — West Coast of Grande Terre.

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Cocos nucifera*.

Genus *Carulaspis* McGillivray, 1921

Carulaspis giffardi (Adachi & Fullaway, 1953)

Pseudoparlatoria giffardi Adachi & Fullaway, 1953: 87.

Published records in New Caledonia. — Cohic (1956, 1958a). No precise localities.

Distribution in New Caledonia. — No precise localities.

Other records. — Central Pacific.

Host-plants in New Caledonia. — *Araucaria columnaris* (Cohic 1956, 1958a), *Araucaria* spp. (Brun & Chazeau 1986).

Note. — According to association of this genus with conifers (Williams & Watson 1988a), especially with *Araucaria* spp., we consider that this species should be regarded as autochtonous in New Caledonia rather than an introduction as stated by Cohic (1958a).

Genus *Chrysomphalus* Ashmead, 1880

Chrysomphalus aonidum (Linnaeus, 1758)

Coccus aonidum Linnaeus, 1758: 455.

Published records in New Caledonia. — Cohic (1956, 1958a); Brun & Chazeau (1986).

Distribution in New Caledonia. — Everywhere but not at high altitudes (Cohic 1958a).

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — Highly polyphagous, *Agathis* spp., *Aleurites moluccana*, *Annona* spp., Arecaceae, *Aspidistra* spp., *Barringtonia asiatica*, *Bauhinia variegata*, *Calophyllum inophyllum*, *Citrus* spp., *Cocos nucifera*, *Dodonaea viscosa*, *Eriobotrya japonica*, *Fragraea* spp., *Ficus* spp., *Gardenia* spp., *Gerbera* spp., *Gladiolus* spp., *Jasminum* spp., *Latania commersonii*, *Laurus nobilis*, *Leucopogon* spp., *Mangifera indica*, *Melaleuca quinquenervia*, *Musa* spp., *Nerium oleander*, *Nothofagus aequilateralis*, *Pandanus* spp., *Rosa* spp., *Sansevieria* spp., *Santalum austrocaledonicum*, *Syzygium cumini*, *Tamarindus indica* (Cohic 1956, 1958a; Brun & Chazeau 1986).

Biological agents. — *Aphytis chrysomphali* and *Encarsia citrina* (Hymenoptera: Aphelinidae).

Note. — Populations of *C. aonidum* seem to be under biological control (Cohic 1958a). Not rated as an economic species.

Chrysomphalus dictyospermi (Morgan, 1889)

Aspidiotus dictyospermi Morgan, 1889: 352.

Material examined. — La Foa County (IAC, SRFP), 14.I.2003, on twigs of *Mangifera indica*, C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — Cohic (1958a); Mille (2011).

Distribution in New Caledonia. — Grande Terre (La Foa County).

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Arillastrum gummiferum* (Cohic 1958a), *Carica papaya*, *Citrus* spp., *Mangiferae indica*, *Persea americana* (Mille 2011).

Chrysomphalus pinnulifer (Maskell, 1891)

Diaspis pinnulifer Maskell, 1891: 4.

Material examined. — Mont-Dore County (IAC, SRMH), 10.IV.2007, on an undescribed species of *Oxera*, S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — This is the first record from New Caledonia.

Distribution in New Caledonia. — Grande Terre (Mont-Dore County).

Other records. — Australasia, North, eastern and southern Africa, Indian Ocean, South America, South-East Asia, southern Europe.

Host-plants in New Caledonia. — Recently found on *Oxera* spp.

Genus *Diaspidiotus* Berlese, 1896

Diaspidiotus perniciosus (Comstock, 1881)

Aspidiotus perniciosus Comstock, 1881: 304.

Material examined. — Païta County (La Tontouta, Quai Manto), 6.IV.2001, on twigs of *Prunus persica*, C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC); Sarraméa County, 24.VI.2002, same host, J. Brinon coll., Rosa C. Henderson det. (CXMNC).

Published records in New Caledonia. — Mille (2011).

Distribution in New Caledonia. — Grande Terre (Païta and Sarraméa counties).

Other records. — Middle East, northern and southern Africa, Europe, Central, North and South America, Australasia, South-East Asia, West Indies, Far East.

Host-plants in New Caledonia. — *Citrus* spp., *Prunus persica* (Mille 2011).

Note. — This species can be a serious problem on young peach trees.

Genus *Diaspis* Costa, 1828

Diaspis bromeliae (Kerner, 1778)

Coccus bromeliae Kerner, 1778: 20.

Published records in New Caledonia. — Watson (2002).

Distribution in New Caledonia. — West Coast of Grande Terre.

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Ananas comosus*, *Bromelia* spp.

Note. — This scale can be a problem when pineapple plants are weak.

Diaspis casuarinae Williams & Watson, 1988* (Fig. 5C, D)

Diaspis casuarinae Williams & Watson, 1988a: 104.

Published records in New Caledonia. — Williams & Watson (1988a).

Distribution in New Caledonia. — Grande Terre, Province Sud (Plum and La Coulée in Mont-Dore County; Nouméa County).

Other records. — Endemic to New Caledonia.

Host-plants in New Caledonia. — *Casuarina* spp. (Williams & Watson 1988a).

Note. — This scale is not a problem on cultivated *Casuarina* trees, which are used as windbreaks.

Diaspis echinocacti (Bouché, 1833)

Aspidiotus echinocacti Bouché, 1833: 53.

Material examined. — Moindou County (Teremba), 20.VI.2001, on *Opuntia* sp. (Prickly Pear), J.-P. Kataoui coll.; Boulouparis County (Bouraké), 19.XII.2003, on *Acanthocereus tetragonus*, C. Mille coll.; both Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — This species is recorded from New Caledonia for the first time.

Distribution in New Caledonia. — Grande Terre (Boulouparis and Moindou counties).

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Acanthocereus tetragonus*, *Opuntia* spp.

Note. — It can develop heavy populations on its hosts.

Genus *Fiorinia* Targioni-Tozzetti, 1868

Fiorinia fioriniae (Targioni-Tozzetti, 1867)

Diaspis fioriniae Targioni-Tozzetti, 1867: 14.

Material examined. — Loyalty Islands (Maré), 29.VIII.2002, on leaves of *Persea americana*, C. Mille coll.; Bourail County (Gouaro), on leaves of *Chrysalidocarpus lutescens*, 11.XI.2002, S. Cazères coll.; Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — The species was first found in 1928 (Williams & Watson 1988a), and was recorded by Cohic (1956, 1958a).

Distribution in New Caledonia. — All over the New Caledonian Archipelago including the Isle of Pines (Cohic 1958a).

Other records. — Northern and southern Africa, Central, North and South America, Australasia, West Indies, Europe, South-East Asia, Pacific Ocean, Middle East, Far East, Indian Ocean.

Host-plants in New Caledonia. — *Anthurium* spp., *Cocos nucifera*, *Persea americana*, *Santalum austrocaledonicum* (Cohic 1958a). Also found on *Chrysalidocarpus lutescens* and *Citrus* spp. (Mille 2011).

Note. — Despite its presence on avocado trees, *F. fioriniae* is not rated as an economic species.

Fiorinia neocaledonica Lindinger, 1911*

Fiorinia neocaledonica Lindinger, 1911: 176.

Published records in New Caledonia. — Lindinger (1911).

Distribution in New Caledonia. — East Coast of Grande Terre (Montagne d'Ou-Rinna, probably the Haute Vallée de Pourina).

Host-plants in New Caledonia. — *Babingtonia pinifolia* (Lindinger 1911).

Note. — A rare species only found in natural habitats.

Fiorinia phantasma Cockerell & Robinson, 1915

Fiorinia phantasma Cockerell & Robinson, 1915: 108.

Material examined. — Nouméa County, 10.IV.2009, on palm, J. Marin coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — This is the first record from New Caledonia.

Distribution in New Caledonia. — Grande Terre (Nouméa County).

Other records. — It is known from American Samoa, Federated States of Micronesia, France, French Polynesia, Grenada, Guam, Hawaii, Indonesia, Malaysia, Maldives' Islands, Nauru, Netherlands, Papua New Guinea, Philippines, La Réunion, Saint-Martin, Singapore, Solomon Islands, Taiwan, Thailand, and Vietnam (Watson *et al.* 2015).

Host-plants in New Caledonia. — Recently found on leaves of an unknown species of Arecaceae. It is also known on the palm tree *Nypa fruticans* in Papua New Guinea, on *Cocos nucifera* in the Solomons Islands and on *Pandanus* spp. in Irian Jaya (Williams & Watson 1988a).

Note. — It appears to be a recent arrival. This species was known as *Fiorinia coronata* Williams & Watson, 1988a (116) but this name is now a junior synonym of *Fiorinia phantasma* (Watson *et al.* 2015).

Genus *Furcaspis* Lindinger, 1908

Furcaspis cyphokentiae Williams & Miller, 2006* (Fig. 5G, H)

Furcaspis cyphokentiae Williams & Miller *in* Williams *et al.*, 2006: 24.

Material examined. — Ponérihouen County (Massif de l'Aoupinié), 4.IV.2008 on leaves of a palm tree, C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — Williams *et al.* (2006).

Distribution in New Caledonia. — Grande Terre (East Coast, Ponérihouen County).

Host-plants in New Caledonia. — *Cyphokentia macrostachya*.

NOTES. — The holotype was found on *C. macrostachya* seeds from New Caledonia intercepted at Plant Quarantine inspection in Hawaii, in 1977. Recently found in Aoupinié Massif (Central Range of Grande Terre) on an unidentified palm (Williams *et al.* 2006).

Furcaspis matileae Williams & Miller, 2006*

Furcaspis matileae Williams & Miller *in* Williams D. J., Miller D. R. & Rung A., 2006: 37.

PUBLISHED RECORDS IN NEW CALEDONIA. — Williams *et al.* (2006).

DISTRIBUTION IN NEW CALEDONIA. — Grande Terre (Yaté County).

HOST-PLANTS IN NEW CALEDONIA. — *Lepidosperma perteres*.

NOTES. — The type specimens were found in the Plaine des Lacs, on the shore of the Lac-en-Huit (Yaté County, South of Grande Terre) in 1976, also found in Plum (Mont-Dore County) in Maquis minier (shrublands) on the same host-plant (Williams *et al.* 2006).

Genus *Hemiberlesia* Cockerell *in* Leonardi, *1897*

Hemiberlesia cyanophylli (Signoret, 1869)

Aspidiotus cyanophylli Signoret, 1869: 119.

MATERIAL EXAMINED. — Mont-Dore County (IAC, SRMH), on leaves of *Chrysalidocarpus lutescens*, 10.IV.2007, S. Cazères coll.; La Foa County (IAC, SRFP), 19.II.2010, on fruits of *Mangifera indica*, J. Brinon coll.; both Rosa C. Henderson det. (NZAC, CXMNC).

PUBLISHED RECORDS IN NEW CALEDONIA. — Cohic (1956, 1958a).

DISTRIBUTION IN NEW CALEDONIA. — Grande Terre (La Foa and Mont-Dore counties).

OTHER RECORDS. — Almost cosmopolitan.

HOST-PLANTS IN NEW CALEDONIA. — *Musa* spp. (Cohic 1956), *Annona squamosa*, *Coffea* spp., *Psidium* spp. (Cohic 1958a), *Cocos nucifera*, *Mangifera indica*, *Musa sapientum* (Williams & Watson 1988a), *Persea americana*, *Psidium guajava* (Mille 2011) and *Oxera* spp. Recently found on *C. lutescens*.

NOTES. — It is not rated as an economic species. Cohic (1958a) noted a restricted distribution for this species in the country, which appears to be still the case.

Hemiberlesia lataniae (Signoret, 1869)

Aspidiotus lataniae Signoret, 1869: 124.

MATERIAL EXAMINED. — La Foa County (IAC, SRFP), 14.I.2003, on fruits and twigs of *Mangifera indica*, C. Mille coll.; Rosa C. Henderson det. (NZAC, CXMNC).

PUBLISHED RECORDS IN NEW CALEDONIA. — Cohic (1958a).

DISTRIBUTION IN NEW CALEDONIA. — Grande Terre (La Foa County).

OTHER RECORDS. — Almost cosmopolitan.

HOST-PLANTS IN NEW CALEDONIA. — *Acacia* spp., *Cordyline neocaledonica*, *Cordyline* spp., *Cycas* spp., *Psidium* spp., *Solanum* spp., *Yucca aloifolia* and *Zigogynum* spp. (Cohic 1958a; Brun & Chazeau 1986), *Artocarpus* spp., *Citrus* spp., *Latania borbonica*, *Mangifera indica*, *Musa* spp., *Passiflora* spp., *Persea americana*, *Prunus persica*, *Vitis vinifera* (Mille 2011).

NOTE. — Rated as a non-economic species in New Caledonia.

Hemiberlesia rapax (Comstock, 1881)

Aspidiotus rapax Comstock, 1881: 307.

PUBLISHED RECORDS IN NEW CALEDONIA. — The species has been found since 1979 (Williams & Watson 1988a).

DISTRIBUTION IN NEW CALEDONIA. — North-East Coast of Grande Terre. Precise distribution unknown.

OTHER RECORDS. — Almost cosmopolitan.

HOST-PLANTS IN NEW CALEDONIA. — *Zygogynum pauciflorum*.

NOTE. — Rated as a non-economic species in New Caledonia.

Genus *Howardia* Berlese & Leonardi, 1896

Howardia biclavis (Comstock, 1883)

Chionaspis biclavis Comstock, 1883: 98.

PUBLISHED RECORDS IN NEW CALEDONIA. — Cohic (1956).

DISTRIBUTION IN NEW CALEDONIA. — All over the New Caledonian Archipelago.

OTHER RECORDS. — Almost cosmopolitan.

HOST-PLANTS IN NEW CALEDONIA. — *Achras zapota*, *Allamanda cathartica*, *Gardenia* spp., *Hibiscus rosa-sinensis*, *Jasminum sambac*, *Mundulea suberosa*, *Plumeria alba*, *Tabernaemontana orientalis* (Cohic 1958a), *Plumeria acuminata* is also cited (Brun & Chazeau 1986).

NOTE. — Rated as a non-economic species in New Caledonia.

Genus *Ischnaspis* Douglas, 1887

Ischnaspis longirostris (Signoret, 1882)

Mytilaspis longirostris Signoret, 1882: XXXV.

MATERIAL EXAMINED. — Nouméa County, 21.IX.2004, on leaves of *Ficus benjamina*, C. Mille coll.; La Foa County (Nili), 1.VII.2008, on leaves of *Olea europea*, C. Mille coll.; both Rosa C. Henderson det. (NZAC, CXMNC).

PUBLISHED RECORDS IN NEW CALEDONIA. — Cohic (1956, 1958a); Brun & Chazeau (1986).

DISTRIBUTION IN NEW CALEDONIA. — Grande Terre (La Foa and Nouméa counties).

OTHER RECORDS. — Almost cosmopolitan.

HOST-PLANTS IN NEW CALEDONIA. — Found on *Monstera deliciosa* (Cohic 1956; Brun & Chazeau 1986) and on *Ficus benjamina* var. *"variegata"* (Mille 2011), recently found of *Olea europea*. It is also recorded on *Citrus* spp. (García *et al.* 2015).

NOTE. — Can sporadically develop heavy infestations, especially on *F. benjamina*, but is rated as a non-economic species.

Genus *Labidaspis* Borchsenius & Williams, 1963

Labidaspis myersi (Green, 1929)

Fiorina myersi Green, 1929: 381.

PUBLISHED RECORDS IN NEW CALEDONIA. — It is recorded from New Caledonia for the first time.

DISTRIBUTION IN NEW CALEDONIA. — Precise distribution unknown.

OTHER RECORDS. — New Zealand.

HOST-PLANTS IN NEW CALEDONIA. — Strictly found in New Zealand on its host plants *Collospermum* and *Astelia* spp., the latter genus being shared between New Caledonia and New Zealand and also present in Australia and South America (Birch *et al.* 2012).

NOTES. — Despite the fact that this species has never been collected again from New Caledonia, three slides in the Natural History Museum collection, London do contain specimens of *Labidaspis myersi*. The collection data "S.C. Mts (W), leaves of ?palm, coll. LG, Feb 1960, C.I.E. B178". This means that insects were collected by Lindsey Gressitt who worked a lot on New Caledonian Coleoptera at that time, "B" was written for the Bishop Museum. It may be regarded as an autochtonous species, but uncommon because of its association with few rare host plants. Further samplings are required to fully address this question.

Genus *Lepidosaphes* Shimer, 1868

Lepidosaphes beckii (Newman, 1869)

Coccus beckii Newman, 1869: 217.

MATERIAL EXAMINED. — La Foa County (IAC, SRFP), 4.VII.2000, on leaves of *Citrus* sp., S. Cazères coll., det. (CXMNC); same loc., 18.VI.2002, on fruits of *C. reticulata* var. *ponkan*, S. Cazères coll., Rosa C. Henderson det. (NZAC); same loc., 30.VII.2008, on fruits of *C. sinensis*, C. Mille coll.; Rosa C. Henderson det. (NZAC).

PUBLISHED RECORDS IN NEW CALEDONIA. — Cohic (1956, 1958a).

DISTRIBUTION IN NEW CALEDONIA. — All over the New Caledonian Archipelago.

OTHER RECORDS. — Almost cosmopolitan.

HOST-PLANTS IN NEW CALEDONIA. — *Citrus* spp., *Murraya* spp. (Cohic 1958a).

BIOLOGICAL AGENTS. — *Aphytis cochereaui* DeBach & Rosen 1976; *A. lepidosaphes* Compere, 1955; *Encarsia lounsburyi* (Berlese & Paoli, 1916) (Hymenoptera: Aphelinidae). Cohic (1956) noted that it can be parasitized by the entomopathogenic fungus *Septobasidium bogoriense* (Patouillard, 1899) (Fungi, Basidiomycota, Septobasidiaceae).

NOTE. — According to Cohic (1958a): "This species is by far the most dangerous on *Citrus* spp. despite the parasitism of *Aphitis chrysomphali* and *Aspidiophagus citrinus* (now *Encyrtus citrina*)".

Lepidosaphes gloverii (Packard, 1869)

Aspidiotus gloverii Packard, 1869: 527.

MATERIAL EXAMINED. — La Foa County (IAC, SRFP), 4.VII.2000, on leaves of *Citrus* sp., S. Cazères coll., det. (CXMNC).

PUBLISHED RECORDS IN NEW CALEDONIA. — Brun & Chazeau (1980).

DISTRIBUTION IN NEW CALEDONIA. — All over the New Caledonian Archipelago.

OTHER RECORDS. — Almost cosmopolitan.

HOST-PLANTS IN NEW CALEDONIA. — *Citrus* spp. (Brun & Chazeau 1980).

BIOLOGICAL AGENTS. — *Aphytis cochereaui*, *A. lepidosaphes*, *Encarsia lounsburyi* (Hymenoptera: Aphelinidae) and the entomopathogenic fungus *Synnematium jonesii* (Fungi, Hypocreales, Ophiocordycipitaceae).

NOTE. — This species is a minor pest in the field but is, with *Lepidosaphes beckii*, economically significant for exports of Tahitian and Mexican limes from New Caledonia to New Zealand.

Genus *Leucaspis* Targioni-Tozzetti, 1868

Leucaspis bugnicourti Cohic, 1958*

Leucaspis bugnicourti Cohic, 1958b: 17.

PUBLISHED RECORDS IN NEW CALEDONIA. — Cohic (1958b).

DISTRIBUTION IN NEW CALEDONIA. — Grande Terre (Nouméa County).

OTHER RECORDS. — Endemic to New Caledonia.

HOST-PLANTS IN NEW CALEDONIA. — *Ficus* spp.

NOTES. — Cohic (1958a) rated this species as very common on *Ficus* spp. According to Williams and Watson (1988a): "The species does not belong to *Leucaspis* as presently understood, and cannot be included under this genus in a key to genera". Further taxonomic work on this species is required.

Genus *Lindingaspis* MacGillivray, 1921

Lindingaspis rossi (Maskell, 1891)

Aspidiotus rossi Maskell, 1891: 3.

MATERIAL EXAMINED. — La Foa County (Nili), 2.XII.2006, on leaves of *Araucaria columnaris*, C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC).

PUBLISHED RECORDS IN NEW CALEDONIA. — Cohic (1958a). *L. rossi* was recorded under the name "*Lindingaspis* sp." in Brun & Chazeau (1986).

DISTRIBUTION IN NEW CALEDONIA. — Grande Terre (La Foa County).

OTHER RECORDS. — Pantropical.

HOST-PLANTS IN NEW CALEDONIA. — Cohic (1958a) observed this species in Boulouparis County, on "*Avicennia officinalis*" which

must be *Avicennia marina* var. *resinifera* because "*A. officinalis*" is not recorded in New Caledonia (Morat *et al.* 2012). Cohic (1958a) also noted that this species was intercepted several times on *Macadamia ternifolia*, in the "quarantine". It is also found on the endemic *Araucaria columnaris* and the introduced *A. angustifolia* (Brun & Chazeau 1986).

NOTE. — Quite rare and rated as a non-economic species in New Caledonia.

Genus *Lopholeucaspis* Balachowsky, 1953

Lopholeucaspis cockerelli (Grandpré & Charmoy, 1899)

Fiorinia cockerelli Grandpré & Charmoy, 1899: 35.

PUBLISHED RECORDS IN NEW CALEDONIA. — Brun & Chazeau (1980).

DISTRIBUTION IN NEW CALEDONIA. — Precise distribution unknown.

OTHER RECORDS. — Almost cosmopolitan.

HOST-PLANTS IN NEW CALEDONIA. — *Citrus* spp.

NOTE. — Not rated as an economic species in New Caledonia.

Genus *Morganella* Cockerell, 1897

Morganella longispina (Morgan, 1889)

Aspidiotus longispina Morgan, 1889: 352.

PUBLISHED RECORDS IN NEW CALEDONIA. — Cohic (1956, 1958a).

DISTRIBUTION IN NEW CALEDONIA. — All over the New Caledonian Archipelago.

OTHER RECORDS. — Everywhere except Europe.

HOST-PLANTS IN NEW CALEDONIA. — *Bauhinia variegata*, *Carica papaya*, *Citrus* spp., *Ficus carica*, *Hibiscus rosa-sinensis*, *Jasminum* spp., *Mangifera indica*, *Persea americana*, *Psidium guajava*, *Tecoma stans* (Cohic 1956, 1958a).

NOTE. — Not rated as an economic species in New Caledonia.

Genus *Poliaspoides* MacGillivray, 1921

Poliaspoides formosana (Takahashi, 1930)

Odonaspis simplex formosana Takahashi, 1930: 29.

PUBLISHED RECORDS IN NEW CALEDONIA. — This is the first record from New Caledonia (Danièle Matile-Ferrero, pers. comm.).

DISTRIBUTION IN NEW CALEDONIA. — Grande Terre (Chutes de la Tiwaka, D. Matile-Ferrero, pers. comm.).

OTHER RECORDS. — Described from Taiwan on *Bambusa* sp., *Bambusa stenostachya* and *Dendrocalamus latiflorus*. Known from Kenya, Mozambique, Mauritius, La Réunion, South Africa, Taiwan and China, also on Poaceae.

HOST-PLANTS IN NEW CALEDONIA. — Collected on *Bambusa* sp.

Genus *Oceanaspidiotus* Takagi, 1984

Oceanaspidiotus araucariae (Adachi & Fullaway, 1953)

Octaspidiotus araucariae Adachi & Fullaway, 1953: 89.

PUBLISHED RECORDS IN NEW CALEDONIA. — Cohic (1956); Brun & Chazeau (1986).

DISTRIBUTION IN NEW CALEDONIA. — Precise distribution unknown.

OTHER RECORDS. — Micronesia (Caroline Island), West Indies (Florida, Puerto Rico), Central Pacific (French Polynesia, Hawaii, Wallis Island).

HOST-PLANTS IN NEW CALEDONIA. — *Araucaria* spp.

NOTES. — Reported as a serious pest on *Araucaria* spp. in Wallis Island (Cohic 1959c). According to the species association with *Araucaria* spp. (Takagi 1984), this is obviously an autochtonous species in New Caledonia rather than introduced as stated by Cohic (1958a). Not common, and no records of it causing significant damage in New Caledonia.

Oceanaspidiotus caledonicus (Matile-Ferrero & Balachowsky, 1973)*

Octaspidiotus caledonicus Matile-Ferrero & Balachowsky, 1973: 239.

PUBLISHED RECORDS IN NEW CALEDONIA. — Matile-Ferrero & Balachowsky (1973).

DISTRIBUTION IN NEW CALEDONIA. — Precise distribution unknown.

HOST-PLANTS IN NEW CALEDONIA. — Known on *Erythrina fastigiata* and *Pittosporum* spp. (Williams & Watson 1988a).

NOTE. — Quite rare and rated as a non-economic species in New Caledonia.

Genus *Odonaspis* Leonardi, 1897

Odonaspis ruthae Kotinsky, 1915

Odonaspis ruthae Kotinsky, 1915: 102.

PUBLISHED RECORDS IN NEW CALEDONIA. — Cohic (1956, 1958a).

DISTRIBUTION IN NEW CALEDONIA. — Precise distribution unknown.

OTHER RECORDS. — Almost cosmopolitan.

HOST-PLANTS IN NEW CALEDONIA. — *Cynodon dactylon*.

NOTE. — This species was not seen again since the first record in 1956.

Genus *Parlatoria* Targioni-Tozzetti, 1868

Parlatoria cinerea Hadden, 1909

Parlatoria cinerea Hadden *in* Doane & Hadden, 1909: 299.

MATERIAL EXAMINED. — La Foa County (IAC, SRFP), 30.VII.2008, on fruits of *Citrus sinensis*, C. Mille coll., Rosa C. Henderson det. (NZAC).

Published records in New Caledonia. — Cohic (1956, 1958a).

Distribution in New Caledonia. — Grande Terre (La Foa County).

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Citrus* spp. Cohic (1956, 1958a), also found on *Annona* spp. and *Vitis vinifera* (Mille 2011).

Note. — Not rated as an economic species in New Caledonia.

Parlatoria crotonis (Douglas, 1887)

Parlatoria proteus var. *crotonis* Douglas, 1887: 242.

Published records in New Caledonia. — Cohic (1956, 1958a).

Distribution in New Caledonia. — Precise distribution unknown.

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — On *Codiaeum variegatum* and *Croton* spp. (Cohic 1958a).

Note. — Not rated as an economic species in New Caledonia.

Parlatoria proteus (Curtis, 1843)

Aspidiotus proteus Curtis, 1843: 676.

Material examined. — Voh County (Village), 23.IV.2003, on *Ficus benjamina*, J. Brinon coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — Mille (2011).

Distribution in New Caledonia. — West Coast of Grande Terre (Voh County).

Other records. — Cosmopolitan.

Host-plants in New Caledonia. — *Citrus* spp., *Ficus benjamina* var. "*variegata*", *Mangifera indica*.

Note. — Not rated as an economic species in New Caledonia.

Genus *Pinnaspis* Cockerell, 1892

Pinnaspis aspidistrae (Signoret, 1869)

Chionaspis aspidistrae Signoret, 1869: 443.

Published records in New Caledonia. — Cohic (1956, 1958a).

Distribution in New Caledonia. — All over the New Caledonian Archipelago.

Other records. — Cosmopolitan.

Host-plants in New Caledonia. — *Citrus* spp., *Cocos nucifera*, *Cordyline neocaledonica*, *Cordyline* spp., *Crinum* spp., *Hibiscus rosa-sinensis*, *Heliconia brasiliense*, *Hippeastrum equestre* (Cohic 1958a; Brun & Chazeau 1980).

Notes. — Cohic (1958a) observed this species on adventive roots of coconut trees following attacks of the Tahitian cocconut weevil *Diocalandra taitensis* (Guérin-Meneville, 1844) (Coleoptera: Curculionidae). Quite common but rated as a non-economic species.

Pinnaspis strachani (Cooley, 1899)

Hemichionaspis minor var. *strachani* Cooley, 1899: 54.

Material examined. — Mont-Dore County (IAC, SRMH), on *Chrysalidocarpus lutescens*, 10.IV.2007, S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — Cohic (1956, 1958a).

Distribution in New Caledonia. — All over the New Caledonian Archipelago.

Other records. — Cosmopolitan.

Host-plants in New Caledonia. — *Aloe* spp., *Cassia alata*, *Chrysalidocarpus lutescens*, *Cocos nucifera*, *Hibiscus rosa-sinensis*, *Litchi chinensis*, *Plumeria alba*, *Saintpaulia* spp. (Cohic 1956, 1958a), *Orchis* spp. (Brun & Chazeau 1980), recently found on *Leucospermum sunrise* in Saint-Louis (Mont-Dore County). It is also recorded on *Citrus* spp. (Miller & Davidson 2005).

Notes. — Able to kill numerous twigs of hibiscus during dry seasons (Cohic 1958a). Rated as a non-economic species.

Genus *Pseudaonidia Cockerell*, 1897

Pseudaonidia trilobitiformis (Green, 1896)

Aspidiotus trilobitiformis Green, 1896: 4.

Material examined. — Bourail County (Gouaro), 28.IV.2002, on fruits of *Citrus* sp., S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC); La Foa County (IAC, SRFP), 9.VII.2002, on leaves of *Swietenia mahogani*, S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC); Moindou County, 6.VIII.2002, on leaves of *Schinus terebinthifolius*, S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC); Mont-Dore County (IAC, SRMH), 10.IV.2007, on leaves and twigs of *Ochrothallus* sp., S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC); La Foa County (IAC, SRFP), 8.III.2011, on Tahitian Lime fruits (*Citrus latifolia*), M. Bouteiller coll., Rosa C. Henderson det. (NZAC); Farino County (Les Hauts de Fonwhary), 2.I.2012, on leaves of *Passiflora quadrangularis*, C. Mille coll., Rosa C. Henderson det. (NZAC); Loyalty Islands (Maré, Atha), 7.VII.2008, on leaves of *Citrus sinensis*, C. Mille coll., Rosa C. Henderson det. (NZAC); Thio County (Nakalé), 3.X.2008, on an unknown plant, C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC); Nouméa County (Vallée des Colons), 18.X.2012, on *Citrus* sp. fruits, C. Mille coll., Rosa C. Henderson det. (CXMNC); La Foa County (Thia) 26.XI.2013, on Tahitian Lime fruits (*C. latifolia*), G. Mercier & J.-C. Kasman coll., Rosa C. Henderson det. (CXMNC).

Published records in New Caledonia. — This species has been recorded from New Caledonia since 1897 (Cohic [1956, 1958a], Williams & Watson 1988a)

Distribution in New Caledonia. — All over the New Caledonian Archipelago.

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Acacia* spp., *Aleurites* spp., *Annona* spp., *Artocarpus* spp., *Barringtonia asiatica*, *Bauhinia variegata*, *Calophyllum inophyllum*, *Capsicum* spp., *Carica papaya*, *Cataranthus roseus*, *Citrus* spp., *Clitoria ternatea*, *Codiaeum* spp., *Cordyline neocaledonica*, *Cordyline* spp., *Cordyline neocaledonica*, *Crescentia cujete*, *Dodonaea viscosa*, *Epipremnum aureum*, *Eriobotrya japonica*, *Ficus* spp., *Laurus nobilis*, *Mucuna bennetti*, *Murraya exotica*, *Nerium oleander*, *Ochrosia appositifolia*, *Passiflora* spp., *Persea americana*, *Psidium* spp., *Pyrostegia venusta*, *Santalum austrocaledonicum* (Cohic 1956, 1958a). Recently found on *Mangifera indica* (Mille 2011), *Ochrothallus* spp., *Swietenia mahogany* and *Schinus terebinthifolius*.

Notes. — Cohic (1958a) noted that this species is the most polyphagous one encountered in New Caledonia, and it can be very dangerous on young *Citrus* trees and on *Passiflora quadrangularis*. A common species rated as an economic pest.

Genus *Pseudaulacaspis* MacGillivray, 1921

Pseudaulacaspis cockerelli (Cooley, 1897)

Chionaspis cockerelli Cooley, 1897: 278.

Material examined. — Nouméa County (Magenta), 15.V.2013, on leaves of *Mangifera indica*, N. Hugot coll., det. Christopher Hodgson (CXMNC).

Published records in New Caledonia. — Brun & Chazeau (1980).

Distribution in New Caledonia. — All over the New Caledonian Archipelago.

Other records. — Southern Europe, Australasia, South-East Asia, Indian Ocean, Eastern, northern and southern Africa, Pacific Ocean, Far East, Micronesia, central Pacific, North America.

Host-plants in New Caledonia. — *Carica papaya* (Brun & Chazeau 1980), recently found on *Mangifera indi*ca (Nicolas Hugot pers. comm.).

Notes. — Not recorded by Cohic during the fifties, so it was probably introduced after 1958. A common species on Papaya trees and rated as an economic pest.

Pseudaulacaspis pentagona (Targioni-Tozzetti, 1886)

Diaspis pentagona Targioni-Tozzetti, 1886: 184.

Material examined. — La Foa County (IAC, SRFP), 14.X.2002, on stems of the "Kanak cabbage" (*Abelmoschus* spp.), J.-P. Kataoui coll., Rosa C. Henderson det. (NZAC, CXMNC); same loc., 14.01.2003, on *M. indica*, C. Mille coll., Rosa C. Henderson det. (NZAC); La Foa County (Nili), 4.IV.2005, on leaves of *Cycas* sp., C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC); same loc., 13.IV.2010, on fruits of *Actinidia chinensis* imported from Italy, C. Mille coll., Rosa C. Henderson det. (NZAC); Nouméa County, 13.VI.2012, on leaves and twigs of *Ligustrum vulgare*, M. Cazères coll., Christopher Hodgson det. (CXMNC).

Published records in New Caledonia. — Cohic (1956, 1958a).

Distribution in New Caledonia. — All over the New Caledonian Archipelago.

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Althea* spp., *Angelonia salicariaefolia*, *Argyreia nervova*, *Broussonetia papyrifera*, *Cassia alata*, *Delphinium* spp., Euphorbiaceae, *Heliotropium foertherianum*, *Morus alba*, *Pelargonium* spp., *Plumeria alba*, *Ricinus communis*, *Stachytarpheta indica* (Cohic 1956, 1958a), *Mangifera indica*, *Carica papaya*, *Passiflora* spp., *Prunus persica* (Mille 2011), recently found on the edible *Abelmoschus* spp., *Actinidia chinensis*, *Cycas* spp. and on *Ligustrum vulgare*. It is also recorded on *Citrus* spp. (Miller & Davidson 2005).

Notes. — Cohic (1956, 1958a) noted that infestations are often associated with the entomopathogenic fungi *Fusarium coccidicola* (Fungi, Hypocreales, Nectriaceae) and *Septobasidium bogoriense* (Fungi, Basidiomycota, Septobasidiaceae). Not rated as an economic species in New Caledonia.

Genus *Radionaspis* Ferris, 1942

Radionaspis indica (Marlatt, 1908)

Leucaspis indica Marlatt, 1908: 26.

Material examined. — La Foa County (IAC, SRFP), 14.I.2003, on *Mangifera indica*, C. Mille coll., Rosa C. Henderson det. (NZAC).

Published records in New Caledonia. — Mille (2011).

Distribution in New Caledonia. — Grande Terre (La Foa County).

Other records. — West Indies, Micronesia, South-East Asia, Central and North America, Western Africa, Central Pacific, Pacific Ocean.

Host-plants in New Caledonia. — *Annona* spp., *Mangifera indica* (Mille 2011).

Note. — A recent introduction, as this species has not been recorded from any other South Pacific country (Williams & Watson 1988a).

Genus *Unaspis* MacGillivray, 1921

Unaspis citri (Comstock, 1883)

Chionaspis citri Comstock, 1883: 100.

Material examined. — Bourail County (Gouaro), 28.IV.2002, on leaves of *Citrus* sp., S. Cazères coll., Rosa C. Henderson det. (NZAC); Païta County (Karikaté), 2.IV.2013, P. Bouyé & A. Chan coll., on branch of *C. sinensis* cultivar *Valencia Late* (CXMNC).

Published records in New Caledonia. — The species has been present since 1928 (Williams & Watson 1988a) and was recorded by Cohic (1956, 1958a).

Distribution in New Caledonia. — All over the New Caledonian Archipelago.

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Citrus* spp.

Biological agents. — *Aphytis chrysomphali* (Hymenoptera: Aphelinidae) and the entomopathogenic fungus *Fusarium coccidicola* (Fungi, Hypocreales, Nectriaceae) (Cohic 1956, 1958a).

Notes. — This is the most economically important scale insect in New Caledonia, despite the presence of *A. chrysomphali*. At least four summer oil applications must be sprayed per year to control *U. citri*.

Family Eriococcidae Cockerell, 1899
(6 species, 5 endemic)
Genus *Chazeauana* Matile-Ferrero, 1988*

Chazeauana gahniae Matile-Ferrero, 1988**

Chazeauana gahniae Matile-Ferrero, 1988: 70.

Published records in New Caledonia. — Matile-Ferrero (1988).

Distribution in New Caledonia. — South of Grande Terre (Yaté County).

Other records. — Endemic to New Caledonia.

Host-plants in New Caledonia. — *Gahnia novocaledoniensis* (Matile-Ferrero 1988).

Note. — This species is only known from the holotype and paratypes which were collected in Yaté in the South of Grande Terre (Matile-Ferrero 1988).

Genus *Choneochiton* Hodgson, 2014*

Choneochiton casuarinae
Hodgson, Mille & Cazères, 2014**

Choneochiton casuarinae Hodgson, Mille & Cazères, 2014: 153.

Material examined. — La Foa County (IAC, SRFP), 7.V.2013, on leaves of *Casuarina collina*, C. Mille coll.; same loc. 24.VII.2013, same host, C. Mille coll.; same loc. 4.XI.2013, same host, J. Brinon coll.; all det. Christopher Hodgson (CXMNC).

Published records in New Caledonia. — Hodgson *et al.* (2014).

Distribution in New Caledonia. — Grande Terre (La Foa County).

Host-plants in New Caledonia. — *Casuarina collina*.

Note. — This recently described species was found on the needle-like stems of some cultivated *C. collina* (Hodgson *et al.* 2014), which is widely used in New Caledonia for windbreaks. The genus is endemic.

Genus *Eriococcus* Targioni-Tozzetti, 1868

Eriococcus araucariae Maskell, 1879

Eriococcus araucariae Maskell, 1879: 218.

Published records in New Caledonia. — Cohic (1958a).

Distribution in New Caledonia. — The species is restricted to coastal areas and does not attack the numerous montane Araucariaceae (Cohic 1958a).

Other records. — Africa, the Americas, Australasia, West Indies, Pacific Ocean, Europe, South-East Asia, Middle East, Indian Ocean, Far East.

Host-plants in New Caledonia. — *Araucaria* spp. (Cohic 1958a).

Biological agents. — *Cryptolaemus montrouzieri* (Coleoptera: Coccinellidae).

Eriococcus millei Williams, 2007*

Eriococcus millei Williams, 2007: 1353.

Published records in New Caledonia. — Williams (2007).

Distribution in New Caledonia. — Belep Islands (Art Island).

Host-plants in New Caledonia. — Unknown.

Note. — This species is only known from its holotype.

Genus *Rhopalotococcus* Williams, 2007*

Rhopalotococcus dugdalei Williams, 2007**

Rhopalotococcus dugdalei Williams, 2007: 1358.

Published records in New Caledonia. — Williams (2007).

Distribution in New Caledonia. — Grande Terre (Monts Koghi, Dumbéa County).

Host-plants in New Caledonia. — Induces galls on leaves of *Metrosideros* spp.

Note. — This species is only known from its specimens which were collected in Monts Koghi.

Rhopalotococcus metrosideri Williams, 2007**

Rhopalotococcus metrosideri Williams, 2007: 1362.

Published records in New Caledonia. — Williams (2007).

Distribution in New Caledonia. — Grande Terre (Monts Koghi, Dumbéa County).

Host-plants in New Caledonia. — Induces galls on leaves of *Metrosideros* spp.

Note. — This species is only known from its holotype and paratypes which were collected in Monts Koghi.

Family Monophlebidae Maskell, 1887
(9 species, 6 endemic)
Genus *Icerya* Signoret, 1879

Icerya purchasi Maskell, 1879

Icerya purchasi Maskell, 1879: 221.

Material examined. — Thio County (Petit Koum), 20.I.2007, on leaves of *Hibbertia trachyphylla*, C. Mille coll., Rosa C. Henderson det. (NZAC).

Published records in New Caledonia. — Cohic (1956).

Distribution in New Caledonia. — East Coast of Grande Terre (Thio County).

Other records. — Cosmopolitan.

Host-plants in New Caledonia. — *Citrus* spp., recently found on *Hibbertia trachyphylla*.

Biological agents. — *Rodalia cardinalis* (Mulsant, 1850) (Coleoptera: Coccinellidae).

Note. — Until 2007, it was only known from the Isle of Pines, based on two specimens. It is still very uncommon.

Icerya samaraia Morrison, 1927

Icerya samaraia Morrison, 1927: 109.

Published records in New Caledonia. — Williams & Watson (1990) mention that the species was first recorded in New Caledonia in 1962.

Distribution in New Caledonia. — Precise distribution unknown.

Other records. — Australasia, Micronesia, Pacific Ocean.

Host-plants in New Caledonia. — *Carica papaya*, *Schinus terebinthifolius* (Williams & Watson 1990).

Note. — This rare species in New Caledonia is known elsewhere to be attended by ants. Not rated as an economic pest.

Icerya seychellarum (Westwood, 1855)

Dorthezia seychellarum Westwood, 1855: 836.

Material examined. — Houaïlou County (Waraï), 10.VIII.2001, on leaves and twigs of *Litchi chinensis*, C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC); Loyalty Islands (Maré, Atha), 7.VII.2008, on leaves and twigs of *Citrus sinensis*, C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — Cohic (1956).

Distribution in New Caledonia. — All over the New Caledonian Archipelago.

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Artocarpus* spp., *Citrus* spp., *Cocos nucifera*, *Coffea* spp., *Cycas* spp., *Elaeis guineensis*, *Ficus pumila*, *Latania commersonii*, *Persea americana*, *Phoenix* spp., *Pyrus malus*, *Prunus persica*, *Rosa* spp. (Cohic 1956, Brun & Chazeau 1986), also found on *Annona* spp., *Averrhoa carambola*, *Carica papaya*, *Litchi chinensis*, *Mangifera indica*, *Musa* spp., *Passiflora* spp., *Psidium guajava*, *Santalum austrocaledonicum*, *Vitis vinifera* (Mille 2011).

Notes. — Generally observed along the main veins of leaves, on twigs and young shoots, also on mature fruits. Several ladybugs (Coleoptera: Coccinellidae) control this species. Not rated as an economic pest.

Genus *Insulococcus* Bhatti, 1991*

Insulococcus magnoporus Bhatti, 1991**

Insulococcus magnoporus Bhatti, 1991: 146.

Published records in New Caledonia. — Bhatti (1991).

Distribution in New Caledonia. — Loyalty Islands (Lifou County), Grande Terre (Sarraméa County).

Other records. — Endemic to New Caledonia.

Host-plants in New Caledonia. — *Syzygium jambos* (Bhatti 1991).

Notes. — A monospecific, endemic genus only known from its holotype and paratype respectively from Lifou County in the Loyalty Islands, and Sarraméa County on Grande Terre.

Genus *Tessarobelus* Montrouzier, 1864*

Tessarobelus guerini Montrouzier, 1864** (Fig. 5E, F)

Tessarobelus guerini Montrouzier, *in* Perroud & Montrouzier, 1864: 247.

Material examined. — Sarraméa County, 20.I.2005, on leaves and twigs of *Syzygium jambos*, P. Jolivet coll., Rosa C. Henderson det. (NZAC, CXMNC); Poya County (Népoui, Kopéto), 19.III.2007, on *Syzygium* sp., J. Munzinger coll., Rosa C. Henderson det. (NZAC).

Published records in New Caledonia. — Perroud & Montrouzier (1864); Bhatti (1991).

Distribution in New Caledonia. — Grande Terre (Sarraméa and Poya counties).

Other records. — Endemic to New Caledonia.

Host-plants in New Caledonia. — *Annona squamosa*, *Calophyllum* sp. (Bhatti 1991), *Syzygium* spp., *Melaleuca quinquenervia* (Cohic 1958a), recently found on *Carpolepis laurifolia*, *Syzygium jambos* and *Metrosideros* spp.

Notes. — Species a redescripted by Miller (1971) from fresh material collected in Sarraméa (Amieu Pass), Ouégoa and Ponérihouen counties, Bhatti (1991) established a neotype from this latter location. It can form heavy infestations on *S. jambos*.

Tessarobelus immaturus Bhatti, 1991**

Tessarobelus immaturus Bhatti, 1991: 138.

Published records in New Caledonia. — Bhatti (1991).

Distribution in New Caledonia. — Grande Terre (Sarraméa County) (Bhatti 1991).

Other records. — Endemic to New Caledonia.

Host-plants in New Caledonia. — Found in an ant's nest at the base of palm leaves (Arecaceae) (Bhatti 1991) and on *Metrosideros* spp.

Notes. —This species is only known from its holotype and paratypes, which were collected in the Amieu Pass (Sarraméa County). There is no information available on its biology or its host plants.

Tessarobelus inusitatus Bhatti, 1991**

Tessarobelus inusitatus Bhatti, 1991: 140.

Material examined. — Yaté County (Piste du Pont des Japonais), 4.II.2007, on leaves and twigs of *Tristaniopsis guillainii*, J. Munzinger coll., Penny Gullan det. (NZAC); Yaté County (Creek Pernod), 19.III.2007, on the same host, J. Munzinger coll., Penny Gullan det. (NZAC).

Published records in New Caledonia. — Bhatti (1991).

Distribution in New Caledonia. — South of Grande Terre.

Host-plants in New Caledonia. — *Tristaniopsis guillainii*, *Melaleuca quinquenervia* (Bhatti 1991).

Tessarobelus ordinarius Bhatti, 1991**

Tessarobelus ordinarius Bhatti, 1991: 142.

Published records in New Caledonia. — Bhatti (1991).

Distribution in New Caledonia. — Grande Terre (Yaté County).

Host-plants in New Caledonia. — On *Casuarina* spp. branches (Bhatti 1991).

Note. — This species is only known from its holotype and paratypes, which were collected in the Plaine des Lacs (Yaté County).

Tessarobelus perissoporosus Bhatti, 1991**

Tessarobelus perissoporosus Bhatti, 1991: 144.

Published records in New Caledonia. — Bhatti (1991).

Distribution in New Caledonia. — Grande Terre (Monts Koghi, Dumbéa County).

Note. — Only known from its type series, which was collected on an unknown plant in Monts Koghi.

Family Ortheziidae Amyot & Serville, 1843
(5 species, 3 endemic)

Genus *Insignorthezia* Kozár, 2004

Insignorthezia insignis (Browne, 1887)

Orthezia insignis Browne, 1887: 169.

Material examined. — Pouembout County, 22.III.2002, on *Coleus* spp., P. Lecren coll., Rosa C. Henderson det. (NZAC, CXMNC); La Foa County (IAC, SRFP), 17.V.2013, on same host, S. Lebegin coll., S. Cazères det. (CXMNC).

Published records in New Caledonia. — Brun & Chazeau (1980, 1986).

Distribution in New Caledonia. — Grande Terre (La Foa and Pouembout counties).

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Lantana camara* (Brun & Chazeau 1980, 1986), *Viburnum* spp. (Williams & Watson 1990), and *Coleus* spp.

Note. — Can develop heavy infestations on ornamentals in urban and disturbed habitats in New Caledonia.

Genus *Newsteadia* Green, 1902

Newsteadia baloghi
Kozár & Konczné Benedicty, 2000*

Newsteadia baloghi Kozár & Konczné Benedicty, 2000: 201.

Published records in New Caledonia. — Kozár & Konczné Benedicty (2000).

Distribution in New Caledonia. — Loyalty Islands (Maré); Grande Terre (Monts Koghi, Dumbéa County); Isle of Pines.

Host-plants in New Caledonia. — Unknown.

Note. — In forest litter. There is no more information available on its biology.

Newsteadia caledoniensis
Kozár & Konczné Benedicty, 2000*

Newsteadia caledoniensis Kozár & Konczné Benedicty, 2000: 209.

Published records in New Caledonia. — Kozár & Konczné Benedicty (2000).

Distribution in New Caledonia. — Isle of Pines.

Host-plants in New Caledonia. — Unknown.

Note. — In forest litter. There is no information available on its biology.

Newsteadia monikae
Kozár & Konczné Benedicty, 2000*

Newsteadia monikae Kozár & Konczné Benedicty, 2000: 207.

Published records in New Caledonia. — Kozár & Konczné Benedicty (2000).

Distribution in New Caledonia. — Grande Terre (Monts Koghi, Dumbéa County).

Host-plants in New Caledonia. — Unknown.

Note. — There is no information available on its biology.

Genus *Nipponorthezinella* Kozár, 2004

Nipponorthezinella guadalcanalia
Morrison, 1952

Nipponorthezinella guadalcanalia Morrison, 1952: 73.

Published records in New Caledonia. — Williams & Watson (1990).

Distribution in New Caledonia. — Precise distribution unknown.

Other records. — Australasia, Indian and Pacific oceans.

Host-plants in New Caledonia. — Unknown, only known from leaf litter, leaf mould on moss.

Notes. — Williams & Watson (1990) noted this species was found in dry earth samples, leaf mould, and leaf litter. This possibly autochtonous species is not rated as an economic species.

Family Pseudococcidae Westwood, 1840
(24 species, 5 endemic)
Genus *Antonina* Signoret, 1875

Antonina graminis (Maskell, 1897)

Sphaerococcus graminis Maskell, 1897: 244.

Material examined. — Chesterfield Islands (Île Longue), 6.XI.2012, on stolons of *Lepturus repens*, H. Jourdan coll., Christopher Hodgson det. (CXMNC).

Published records in New Caledonia. — Collected in 1928 by Cockerell *in* Cohic (1956, 1958a); Brun & Chazeau (1986) and Williams & Watson (1988b).

Distribution in New Caledonia. — No precise distribution on Grande Terre, but present in the Chesterfield Islands.

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Cynodon dactylon*, *Panicum maximum*, *Paspalum* spp. and several other species of Poaceae (Brun & Chazeau 1986).

Notes. — Cohic (1958a) recorded this species from the Isle of Pines and Grande Terre, distributed mainly on coastal areas. Recently recorded in the Chesterfield Islands, associated with the invasive and aggressive ant *Wasmannia auropunctata* (Jourdan & Bourguet 2013).

Genus *Dysmicoccus* Ferris, 1950

Dysmicoccus boninsis (Kuwana, 1909)

Dactylopius boninsis Kuwana, 1909: 161.

Published records in New Caledonia. — Cohic (1958a).

Distribution in New Caledonia. — All over the New Caledonian Archipelago.

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Saccharum officinarum* (Cohic 1958a).

Biological agents. — Cohic (1958a) noted that the spread of this mealybug was effectively limited by the ladybird *Cryptolaemus montrouzieri* (Coleoptera: Coccinellidae).

Notes. — Cohic (1958a) observed it all over the country on every clump of sugarcane, at the base of leaf sheaths. It is not rated as an economic species.

Dysmicoccus brevipes (Cockerell, 1893)

Dactylopius brevipes Cockerell, 1893: 267.

Material examined. — Sarraméa County, on *Ananas comosus*, 2001, C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC); same loc., on roots of *A. comosus*, 12.VI.2002, C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC); Bourail County (Gouaro), on flowers of *Chrysalidocarpus lutescens*, 11.XI.2002, S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC); same loc., on flowers of *Chamaedorea costaricana* 11.XI.2002, S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC); Mont-Dore County (IAC, SRMH), on twigs of *Curcuma alismatifolia*, 1.II.2006, G. Gâteblécoll., Rosa C. Henderson det. (NZAC, CXMNC); Yaté County (Mr Champalou Farm), on roots of *Kyllinga* sp. and on roots of *Eleusine indica*, 8.V.2007, P. Caplong coll., Rosa C. Henderson det. (NZAC); La Foa County at the OCEF (Office de Commercialisation et d'Entreposage frigorifique) squash sorting plant, 06.X.2010, on squash (*Cucurbita pepo*), F. Gandet coll., Rosa C. Henderson det. (NZAC, CXMNC); this species was also intercepted from New Zealand on fruit of *A. comosus*, 17.02.2009, A. Vonsy coll., Rosa C. Henderson det. (NZAC) and twice from Australia also on fruit of *A. comosus*, 23.II.2009 & 5.III.2009, A. Vonsy coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — Cohic (1958a).

Distribution in New Caledonia. — All over the New Caledonian Archipelago.

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Ananas comosus*, *Coleus blumei*, *Cyperus rotondus* (Cohic 1958a), *Coffea* spp., *Saccharum officinarum* (Brun & Chazeau 1986), *Cordyline* spp., *Curcuma alismatifolia*, *Chrysalidocarpus lutescens*, also recently found on roots of *Eleusine indica* and *Kyllinga* spp., on *Chamaedorea costaricana*, *Curcuma alismatifolia* and squash (*Cucurbita pepo*).

Biological agents. — *Myiocnema comperei* Ashmead, 1900 (Hymenoptera: Eriaporidae) and *Hambletonia pseudococcina* Compere, 1936 (Hymenoptera: Encyrtidae) were reared recently (2011) from *D. brevipes* on pineapple in Pouembout County.

Note. — Despite the presence of this mealybug, the Pineapple Mealybug Wilt Disease is not recorded in New Caledonia, but because of this known association this insect is rated as an economic pest.

Dysmicoccus neobrevipes Beardsley, 1959

Dysmicoccus neobrevipes Beardsley, 1959: 31.

Material examined. — Sarraméa County, 12.VI.2002, on roots of *Ananas comosus*, C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — Mille (2011).

Distribution in New Caledonia. — All over the New Caledonian Archipelago.

Other records. — North and South America, Asia, Pacific Ocean.

Host-plants in New Caledonia. — *Ananas comosus*, *Annona* spp. and *Cucurbita pepo*.

Notes. — This species was found in association with *D. brevipes* on pineapple and also on *Annona* spp. Like the previous species, *D. neobrevipes* is a potential vector of Pineapple Mealybug Wilt Disease, and is therefore also rated as an economic pest.

Genus *Ferrisia* Fullaway, 1923

Ferrisia malvastra (McDaniel, 1962)

Heliococcus malvastrus McDaniel, 1962: 323.

Material examined. — La Foa County (IAC, SRFP), 29.XI.2008, *E. hirta*, C. Mille coll., Rosa C. Henderson det. (NZAC).

Published records in New Caledonia. — Williams & Watson (1988b).

Distribution in New Caledonia. — Grande Terre (La Foa County).

Other records. — North and South America, Australasia, Pacific Ocean, Middle East, southern Africa, West Indies.

Host-plants in New Caledonia. — On roots of species of an Asteraceae and on *Euphorbia hirta*.

Note. — Not rated as an economic species.

Ferrisia virgata (Cockerell, 1893)

Dactylopius virgata Cockerell, 1893: 178.

Published records in New Caledonia. — Cohic (1958a).

Distribution in New Caledonia. — All over the New Caledonian Archipelago.

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Acalypha* spp., *Annona* spp., *Ceiba pentandra*, *Citrus* spp., *Codiaeum variegatum*, *Coffea arabica*, *Euphorbia pulcherrima*, *Gossypium* spp., *Lantana camara*, *Leuceana leucocephala* (Cohic 1958a), also found recently on *Carica papaya*, *Mangifera indica*, *Psidium guajava* (Mille 2011).

Notes. — Kaydan & Gullan (2012) recently revised the genus *Ferrisia* Fullaway, 1923 and showed that *F. virgata* as previously understood was a complex of related species. It is therefore difficult to fully assess the identity of past records (one or more species) for New Caledonia. Regarding the distribution recorded by Kaydan & Gullan (2012), it is reasonable to estimate that *F. virgata* is present. Some *Ferrisia* sp. specimens have been recently discovered in the Chesterfield Islands on *Boerhavia diffusa* and *Heliotropium foertherianum* (Jourdan & Bourguet 2013). Risbec (1942) considered this species as a very dangerous one, though Cohic (1958a) noted that it was a common species but not harmful. Today, we consider it as an uncommon species on Grande Terre and hence an unimportant pest.

Genus *Heliococcus* Šulc, 1912

Heliococcus summervillei Brookes, 1978

Heliococcus summervillei Brookes, 1978: 241.

Published records in New Caledonia. — First detected in 1998 (Brinon *et al.* 2004).

Distribution in New Caledonia. — During its outbreak in 1998, it was observed in Grande Terre (Boulouparis, Bourail, Dumbéa, Koumac, La Foa, Ouégoa, Païta, Poindimié counties) (Brinon *et al.* 2004).

Other records. — Australia, Indian subcontinent.

Host-plants in New Caledonia. — On *Oryza sativae* in India, in pastures elsewhere on *Bracharia decumbens*, *B. ruziziensis*, *Chloris gayana*, *Digitaria milanjiana*, *Panicum maximum*, *P. compressum*, *Urochloa mosambicensis* (Brinon *et al.* 2004).

Note. — After a serious outbreak in 1998, this mealybug "disappeared" in the same way as with its oubreaks in Australia (Brinon *et al.* 2004).

Genus *Maconellicoccus* Ezzat, 1958

Maconellicoccus hirsutus (Green, 1908)

Phenacoccus hirsutus Green, 1908: 25.

Material examined. — Bourail County (Gouaro), 28.IV.2002, on twigs and leaves of *Hibiscus rosa-chinensis*, S. Cazères coll., Rosa C. Henderson det. (NZAC).

Published records in New Caledonia. — Mille (2011).

Distribution in New Caledonia. — Precise distribution unknown.

Other records. — Africa, Western Europe, Middle East, South-East Asia, Pacific Ocean, West Indies, Far East, Indian Ocean, North America.

Host-plants in New Caledonia. — *Annona* spp., *Hibiscus rosa-chinensis* (Mille 2011).

Notes. — The species appears to be a recent introduction; it was first detected and identified in New Caledonia in 2002. It can be rated as an economic species.

Genus *Neoclavicoccus* Cohic, 1959*

Neoclavicoccus bugnicourti Cohic, 1959**

Neoclavicoccus bugnicourti Cohic, 1959a: 90.

Published records in New Caledonia. — Cohic (1959a).

Distribution in New Caledonia. — This species is known from its type material, which was collected in Montagne des Sources (500 m). It was also collected in Monts Koghi, on *Beckea ericoides*, 15.XI.1983, a new record (Danièle Matile-Ferrero, pers. comm.).

Host-plants in New Caledonia. — On leaflets of *Baeckea ericoides* (Danièle Matile-Ferrero, pers. comm.).

Neoclavicoccus ferrisi Cohic, 1959**

Neoclavicoccus ferrisi Cohic, 1959a: 88.

Published records in New Caledonia. — Cohic (1959a).

Distribution in New Caledonia. — This species is known from its type material, which was collected in Montagne des Sources (600 m). Also found in Mont Do (980 m), on *Eriaxis rigida*, 27.XI.1983, a new record (Danièle Matile-Ferrero, pers. comm.).

Host-plants in New Caledonia. — On leaf axils of an unknown plant of the Maquis minier, and on the Maquis minier orchid *Eriaxis rigida* (Danièle Matile-Ferrero, pers. comm.).

Genus *Nipaecoccus* Šulc, 1945

Nipaecoccus viridis (Newstead, 1894)

Dactylopius viridis Newstead, 1894: 25.

Material examined. — Bourail County (Gouaro), 4.IV.2002, on fruits of *Annona squamosa*, S. Cazères coll.; Kaala-Gomen County (Ouaco Village), 7.X.2002, on twigs of *Jatropha gossypifolia*, C. Mille coll.; La Foa County (IAC, SRFP), 14.I.2008, on twigs of *Vitis vinifera* (greenhouse), C. Mille coll.; all Rosa C. Henderson det. (NZAC).

Published records in New Caledonia. — Cohic (1956, 1958a).

Distribution in New Caledonia. — All over the New Caledonian Archipelago.

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Citrus* spp., *Nerium oleander* (Brun & Chazeau 1986), also found on *Annona squamosa* (Mille 2011), *Jatropha gossypifolia* and *Vitis vinifera*.

Biological agents. — *Cryptolaemus montrouzieri* (Coleoptera: Coccinellidae) and some unidentified hymenopterous parasitoids.

Note. — Can be a serious problem on newly pruned twigs and branches of *Citrus* trees and because of this, it is rated as an economic species.

Genus *Palmicultor* Williams, 1963

Palmicultor browni (Williams, 1960)

Palmicola browni Williams, 1960: 417.

Material examined. — Nouméa County, 12.X.2007, on *Chrysalidocarpus lutescens*, H. Jourdan coll., Rosa C. Henderson det. (NZAC, CXMNC).

Distribution in New Caledonia. — Grande Terre (Nouméa County).

Published records in New Caledonia. — This is the first record from New Caledonia.

Other records. — Australasia, Pacific Ocean.

Host-plants in New Caledonia. — Found on *Chrysalidocarpus lutescens*.

Note. — It appears to be a recent introduction, but is not rated as an economic species.

Palmicultor palmarum (Ehrhorn, 1916)

Ripersia palmarum Ehrhorn, 1916: 245.

Published records in New Caledonia. — Cohic (1956, 1958a); Brun & Chazeau (1986).

Distribution in New Caledonia. — All over the New Caledonian Archipelago.

Other records. — West Indies, South-East Asia, Pacific Ocean, Central and North Americas.

Host-plants in New Caledonia. — *Cocos nucifera* (Brun & Chazeau 1986).

Note. — Can kill germinating palms but is not dangerous to adult trees (Cohic 1956); for this reason, it should be regarded as an economic species.

Genus *Phenacoccus* Cockerell, 1893

Phenacoccus parvus Morrison, 1924

Phenacoccus parvus Morrison, 1924: 147.

Material examined. — Mont-Dore County (Mr Champalou Farm), 21.III.2007, on *Solanum lycopersicum*, P. Caplong coll., Rosa C. Henderson det. (NZAC, CXMNC); same loc., 8.V.2007, on *S. lycopersicum* and *Ageratum conyzoïdes*, same coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — This species has been present in New Caledonia since 1974 (Williams & Watson 1988b).

Distribution in New Caledonia. — All over the New Caledonian Archipelago.

Other records. — West Indies, Central, North and South America, Pacific Ocean, Australasia, southern Europe, western and equatorial Africa.

Host-plants in New Caledonia. — Williams & Watson (1988b) listed the species on *Solanum tuberosum* with a question mark.

Note. — It is not rated as an economic species, but it should be monitored as it is found on economic crops.

Phenacoccus solenopsis Tinsley, 1898

Phenacoccus solenopsis Tinsley, 1898: 47.

Material examined. — Païta County (La Tontouta, PNVF, Plateforme de Normalisation des Végétaux aux Frontières), 23.V.2006, on leaves of *Solanum melongena*, T. Parc coll., Christopher Hodgson det. (NZAC); Bourail County (Gouaro), 23.III.2007, on leaves of *S. lycopersicon*, S. Cazères coll., Christopher Hodgson det. (NZAC, CXMNC); Mont-Dore County (IAC, SRMH), 10.IV.2007, on leaves and twigs of *Marsdenia nigriflora* and leaves of *Corchorus neocaledonicus*, S. Cazères coll., Christopher Hodgson det. (NZAC, CXMNC); Païta County (greenhouses, Mr J.-B. Marchand Farm), 11.V.2007, on leaves and fruits of *Capsicum annuum*, P. Caplong coll., Christopher Hodgson det. (NZAC, CXMNC); La Foa County (P. Lecren property), 22.II.2010, on *Tagetes patula*, P. Lecren coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — Hodgson *et al.* (2008).

Distribution in New Caledonia. — West Coast of Grande Terre.

Other records. — Western Africa, southern Asia, North America.

Host-plants in New Caledonia. — *Capsicum annuum*, *Corchorus neocaledonicus*, *Marsdenia nigriflora*, *Solanum lycopersicum*, *S. melongena*, and on *Tagetes patula*.

Notes. — This species was found in Saint-Louis, at the IAC SRMH in Mont-Dore County and also in the counties of Bourail, La Foa, Païta (La Tontouta), firstly in 2006. Not rated as an economic species, but as it is a recent introduction it should be monitored carefully in tomato greenhouses.

Genus *Planococcus* Ferris, 1950

Planococcus citri (Risso, 1813)

Dorthezia citri Risso, 1813: 416.

Material examined. — Bourail County (Gouaro), 7.X.2002, on roots & twigs of *Portulaca* spp., S. Cazères coll., Rosa C. Henderson det. (NZAC); Boulouparis County (La Ouenghi), 21.VIII.2008, on fruits of *Sechium edule*, F. Gandet coll., Rosa C. Henderson det. (NZAC).

Published records in New Caledonia. — Brun & Chazeau (1980).

Distribution in New Caledonia. — All over the New Caledonian Archipelago.

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Annona* spp., *Citrus* spp., *Melaleuca quinquenervia*, *Musa sapientum*, *Nerium oleander*, *Passiflora* spp., *Phaseolus* spp., *Sechium edule* (Brun & Chazeau 1980), recently found on roots of *Portulaca* spp. (Mille 2011).

Biological agents. — *Cryptolaemus montrouzieri* (Coleoptera: Coccinellidae).

Note. — Not rated as an economic species in New Caledonia.

Planococcus minor (Maskell, 1897)

Dactylopius calceolariae minor Maskell, 1897: 322.

Material examined. — Bourail County (Gouaro), 12.X.2002, on roots of pumpkin (*Cucurbita* sp.), S. Cazères coll.; Mont-Dore County (IAC, SRMH), 10.IV.2007, on leaves and twigs of *Marsdenia nigriflora*, S. Cazères coll.; La Foa County (IAC, SRFP), 26.III.2009, on leaves and twigs of *Annona* sp., C. Mille coll.; Rosa C. Henderson det. (NZAC); Dumbéa County (Mr J.-G. Fong greenhouses), 9.XI.2011, on *Rosa chinensis*, C. Mille coll., Rosa C. Henderson det. (NZAC, CXMNC).

Published records in New Caledonia. — Williams & Watson (1988b) as "*P. pacificus* Cox, 1981" (Williams & Watson 1988b) is a junior synonym of *P. minor* (Ben-Dov 2012b). This species was collected by N. L. H. Krauss in Yahoué (Dumbéa County) in 1983 and 1986 and in Nouméa in 1984 (D. J. Williams, pers. comm.).

Distribution in New Caledonia. — All over the New Caledonian Archipelago.

Other records. — Pacific Ocean, West Indies, Central, North and South Americas, Australasia, South-East Asia, Indian Ocean.

Host-plants in New Caledonia. — *Coffea* spp. and *Ficus* spp. (Doug J. Williams, pers. comm.). Also known on *Annona* spp., *Citrus* spp., *Cucurbita* spp., *Marsdenia nigriflora* and *Rosa chinensis*.

Note. — Rated as an economic species. Many different ant genera attend this species (Williams & Watson 1988b).

Genus *Pseudococcus* Westwood, 1840

Pseudococcus gilbertensis Beardsley, 1966

Pseudococcus gilbertensis Beardsley, 1966: 441.

Material examined. — Mont-Dore County (Mr Champalou Farm), 8.V.2007, on roots of *Polygala paniculata*, P. Caplong coll., Rosa C. Henderson det. (NZAC).

Published records in New Caledonia. — This is the first record from New Caledonia.

Distribution in New Caledonia. — Grande Terre (Mont-Dore County).

Other records. — Kiribati, Bonin Islands.

Host-plants in New Caledonia. — *Polygala paniculata*.

Note. — This is a recent introduction; it should be monitored as the species is also known to infest mangos (Watson 2002).

Pseudococcus longispinus Targioni-Tozzetti, 1867

Pseudococcus longispinus Targioni-Tozzetti, 1867: 1.

Material examined. — Bourail County (Gouaro), 11.XI.2002, on leaves of *Schefflera* sp., S. Cazères coll., Rosa C. Henderson det. (NZAC, CXMNC); Koumac County (Tiébaghi Mining Plant), 9.III.2013, on leaves and twigs of an unidentified Myrtaceae, C. Mille coll., Christopher Hodgson det. (CXMNC).

Published records in New Caledonia. — Cohic (1958a).

Distribution in New Caledonia. — Grande Terre (Bourail and Koumac counties).

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Alocasia macrorrhiza*, *Caladium bicolor*, *Coffea* spp., *Colocasia esculenta*, *Ficus* spp., *Santalum austrocaledonicum*, *Solanum tuberosum*, *Vitis vinifera* (Brun & Chazeau 1986), *Bruguiera eriopetala* (Williams & Watson 1988b), also on *Schefflera* spp. It is also recorded on *Citrus* spp. (García *et al.* 2015).

Note. — It was recently observed and collected by one of us (CM), in large numbers in the "maquis minier" on Tiébaghi (far north of Grande Terre).

Pseudococcus orchidicola Takahashi, 1939

Pseudococcus orchidicola Takahashi, 1939: 242.

Distribution in New Caledonia. — Rivière des Pirogues, on *Cordyline* spp., D. Matile-Ferrero (pers. comm.).

Other records. — Described from the Marianna Islands on an orchid. Known only from several islands of the Australasian region, Vanuatu included.

Host-plants in New Caledonia. — Polyphagous on various plant families.

Note. — First record from New Caledonia.

Genus *Rastrococcus* Ferris, 1954

Rastrococcus matileae Williams & Watson, 1988*

Rastrococcus matileae Williams & Watson, 1988b: 207.

Published records in New Caledonia. — Williams & Watson (1988b).

Material examined. — Magenta, Nouméa County, on *Bruguiera eriopetala*, 3.II.1958, C. P. Hoyt (MNHN); Saint-Louis, Mont-Dore County, on *Rhizophora mucronata*, XI.1957, F. Cohic, (MNHN) new record.

Host-plants in New Caledonia. — *Bruguiera eriopetala* (Williams & Watson 1988b) and *Rhizophora mucronata* (Danièle Matile-Ferrero, pers. comm.).

Distribution in New Caledonia. — Grande Terre (Mont-Dore and Nouméa counties).

Notes. — The type-locality, Magenta, was obviously mentioned on the slides of the type-series, but does not appear in the publication by Williams & Watson (1988b). Erroneously published with the date 3.XI.1958, instead of 3.II.1958, in Williams & Watson (1988b).

Genus *Ripersiella* Tinsley *in* Cockerell, 1899

Ripersiella caledoniensis Kozár & Konczné Benedicty, 2003*

Ripersiella caledoniensis Kozár & Konczné Benedicty, 2003: 229.

Published records in New Caledonia. — Kozár & Konczné Benedicty (2003).

Distribution in New Caledonia. — No precise locality given in the original description. From forest litter.

Ripersiella tillierorum Kozár & Konczné Benedicty, 2003*

Ripersiella tillierorum Kozár, Konczné Benedicty, 2003: 233.

Published records in New Caledonia. — Kozár & Konczné Benedicty (2003).

Distribution in New Caledonia. — Grande Terre. Only recorded from the type locality (Mont Neponkoni 490 m) in Canala County and from Dolines de Yaté (Yaté County, 280 m).

Host-plants in New Caledonia. — Unknown.

Genus *Saccharicoccus* Ferris, 1950

Saccharicoccus sacchari (Cockerell, 1895)

Dactylopius sacchari Cockerell, 1895: 195.

Published records in New Caledonia. — Cohic (1958a).

Distribution in New Caledonia. — All over the New Caledonian Archipelago.

Other records. — Almost cosmopolitan.

Host-plants in New Caledonia. — *Saccharum officinarum* (Cohic 1958a; Brun & Chazeau 1986).

Biological agents. — *Cryptolaemus montrouzieri* (Cocleoptera: Coccinellidae).

Note. — Not rated as an economic species in New Caledonia.

Family Rhizoecidae Williams, 1969 (3 exotic species)

Genus *Geococcus* Green, 1920

Geococcus coffeae Green, 1933

Geococcus coffeae Green, 1933: 54.

Material examined. — Found in Ouen Toro, Nouméa County, on roots of grass, 13.XII.1983, MNHN (Danièle Matile-Ferrero, pers. comm.).

Published records in New Caledonia. — It was also collected in 1987 on Maré in Loyalty Islands (Kianek *et al.* 2007).

Distribution in New Caledonia. — Grande Terre (Nouméa County); Loyalty Islands (Maré).

Other records. — Pantropical.

Geococcus baloghi Kianek & Konczné Benedicty, 2007

Geococcus baloghi Kianek & Konczné Benedicty, 2007: 40.

Published records in New Caledonia. — Kianek *et al.* (2007).

Distribution in New Caledonia. — Loyalty Islands (Lifou).

Other records. — Papua New Guinea.

Host-plants in New Caledonia. — Unknown.

Genus *Rhizoecus* Künckel d'Herculais, 1878

Rhizoecus cacticans (Hambleton, 1946)

Ripersiella cacticans Hambleton, 1946: 64.

Material examined. — Mont-Dore County (IAC, SRMH), 10.IV.2007, on *Corchorus neocaledonicus*, 5.IV.2007, on *Oxera brevicalys*, S. Cazères coll., Rosa C. Henderson det. (NZAC); Chesterfield Islands (Île Longue), 6.XI.2012, on *Boerhavia diffusa*, H. Jourdan & E. Bourguet coll., Christopher Hodgson det. (CXMNC).

Published records in New Caledonia. — This is the first record from New Caledonia.

Distribution in New Caledonia. — Grande Terre (Mont-Dore County); Chesterfield islands.

Other records. — Australia, North and South America, Europe.

Host-plants in New Caledonia. — It was first collected in 2007 on *Corchorus neocaledonicus*, *Opuntia* spp., and *Oxera brevicalys*.

Unestablished species

Family Pseudococcidae Westwood, 1840

Hypogeococcus festerianus (Lizer y Trelles, 1942)

Pedronia festeriana Lizer y Trelles, 1942: 24.

Published records in New Caledonia. — Intentionally introduced in 2003 and 2006 from Australia (Brinon 2008).

Other records. — South America, Australia, southern Europe, southern Africa.

Host-plants in New Caledonia. — *Acanthocereus tetragonus*.

Notes. — This mealybug was introduced to attempt biological control of the invasive cactus *A. tetragonus*, but both 2003 and 2006 strains from Queensland did not survive (Brinon 2008, Gatimel *et al.* 2010), so the species is considered still absent from New Caledonia.

Erroneous records from New Caledonia

Family Diaspididae (Targioni-Tozzetti, 1868)

Clavaspis herculeana
(Cockerell & Hadden *in* Doane & Hadden, 1909)

Clavaspis herculeana Cockerell & Hadden, *in* Doane & Hadden, 1909: 298.

Notes. — According to Ben-Dov *et al.* (2015), this species was recorded from New Caledonia by Nakahara (1982) but there are no voucher specimens to validate this record. Furthermore, regarding its widespread distribution in the South Pacific Region, we have never observed it on *Erythrina indica*, which is the main host for this species in French Polynesia (Reboul 1976).

Other records. — North, eastern and southern Africa, North and South America, Australasia, Indian and Pacific oceans.

Lindingaspis buxtoni (Laing, 1927)

Lindingaspis buxtoni Laing, 1927: 40.

Published records in New Caledonia. — Cohic (1958a).

Other records. — Western Samoa (Williams & Watson, 1988a).

Notes. — Despite the record from New Caledonia on the ScaleNet website (http://scalenet.info/catalogue/Lindingaspis%20buxtoni/), it appears that the only "*buxtoni* Laing" species ever recorded from New Caledonia is "*Aonidia buxtoni* Laing", now known as *Agrophaspis buxtoni* (Laing, 1933) (see above). The record of *Lindingaspis buxtoni* (Laing, 1927) from New Caledonia appears to be erroneous and this species should be removed from the New Caledonian Coccomorpha checklist.

Family Dactylopiidae Signoret, 1875

Dactylopius tomentosus (Lamarck, 1801)

Coccus tomentosus Lamarck, 1801: 299.

Other records. — Central, North and South America, Australasia, Indian Ocean, southern Africa.

Notes. — Cohic (1952) proposed to introduce two species of *Dactylopius*, *D. ceylonicus* (Green, 1896) and *D. tomentosus* (Lamarck, 1801) for biocontrol against *Opuntia* spp., but was refused permission by the authorities. "*D. tomentosus*" was finally introduced deliberately from Hawaii in 1957 (Cohic 1962; Cochereau 1972; Gatimel 2004), but Cohic (1962) doubted the identity of the introduced species; he did not have the benefit of De Lotto's later revision that clarified the confused status and identity of the various *Dactylopius* species names (De Lotto 1974). Williams & Watson (1990) identified specimens collected from New Caledonia by Cohic in 1960 as *Dactylopius opuntiae*, not *D. tomentosus*.

Family Pseudococcidae Westwood, 1840

Dysmicoccus cocotis (Maskell, 1890)

Dactylopius cocotis Maskell, 1890: 149.

Other records. — Pacific Ocean.

Notes. — This record from a collection by Cochereau in 1966 "in New Caledonia" (Trapeznikova & Gavrilov 2008) is wrong because of a slide-labelling error. The specimens were actually collected on Mangareva Island in the Gambier Archipelago, on 13th April 1966 (Danièle Matile-Ferrero, pers. comm.).

Nipaecoccus filamentosus Cockerell, 1893

Nipaecoccus filamentosus Cockerell, 1893: 254.

Published records in New Caledonia. — Brun & Chazeau (1980, 1986).

Other records. — Haiti, Puerto Rico & Vieques Island, Turks and Caicos Islands (Ben-Dov 2012a).

Notes. — In previous New Caledonia catalogues (Brun & Chazeau 1980, 1986), *Pseudococcus filamentosus* was included but Cohic (1958a) had already stated that it was a misidentification of *N. vastator* (Maskell), a former synonym of *N. viridis*, which was also used in several publications (Cohic 1958a; Brun & Chazeau 1980, 1986). More recently, Williams & Watson (1990: 124) noted that all records of "*N. filamentosus*" from the Pacific region are misidentifications of *N. viridis*; *N. filamentosus* is a species known only from the West Indies and Central America. Additionally, Ben-Dov (2012a) does not record this taxon from New Caledonia, so this species must be removed from the New Caledonian records.

Table 1. — Comparison between taxonomic compositions of Coccoidea in New Caledonia and five other Pacific Island countries. For each family, the total species are displayed and the number of endemic ones are given in brackets. Data for New Zealand after Macfarlane *et al.* 2010; Fiji and Hawaii after D.J. Williams pers. comm. 3rd August 2012; French Polynesia after Hammes & Putoa 1986 and Ben-Dov *et al.* 2015; and Vanuatu after Ben-Dov *et al.* 2015.

	Pacific Island countries					
Families	**New Caledonia**	**New Zealand**	**Hawaii**	**Fiji Islands**	**French Polynesia**	**Vanuatu**
Asterolecaniidae	3 (1)	3 (2)	4	4	2	1
Cerococcidae	–	3 (3)	–	2	–	–
Coccidae	16	59 (45)	20	16 (1)	12	14
Conchaspididae	1	–	–	1	1	–
Dactylopiidae	1	–	1	–	–	–
Diaspididae	50 (9)	90 (62)	91	61 (7)	30	24
Eriococcidae	6 (5)	102 (96)	2	1	–	1
Halimococcidae	–	1 (1)	5 (3)	–	–	–
Monophlebidae	9 (6)	11 (10)	1	4	3	1
Ortheziidae	5 (3)	3 (1)	3	1	–	2
Phenacoleachiidae	–	2 (2)	–	–	–	–
Pseudococcidae	24 (5)	112 (96)	63 (33)	27 (10)	13	14
Rhizoecidae	3	4	6 (1)	2 (1)	–	1
Total of taxa	**118** (29)	**390** (318)	**196** (37)	**119** (19)	**61** (0)	**58** (0)
Endemism level	24.6%	81.5%	18.9%	16%	0%	0%

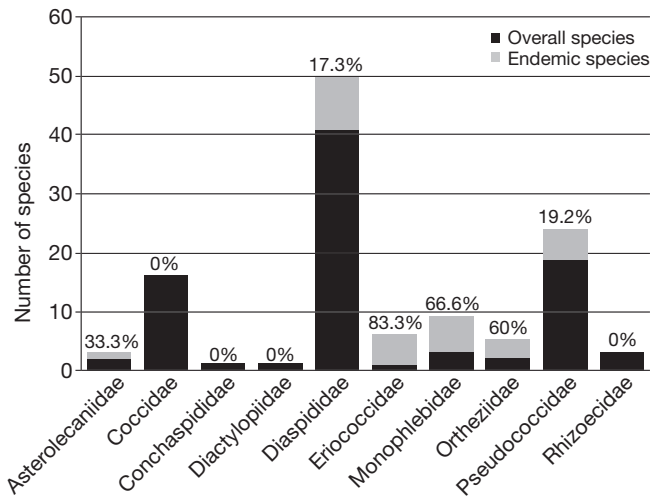

Fig. 1. — Contribution of each family to the New Caledonian Coccomorpha fauna (The percentages represent the proportion of endemic species for each family).

DISCUSSION

The catalogue by Brun & Chazeau (1986) listed 57 exotic Coccomorpha species (excl. unidentified species, synonyms and misidentifications), mainly from agrosystems. Here, we list an additional 61 species, ten of which are recorded from New Caledonia for the first time. Since 1986, 18 species have been described from New Caledonia, and 36 more species have been recorded. At the family level, species numbers are: three Asterolecaniidae, 16 Coccidae, one Conchaspididae, one Dactylopiidae, 50 Diaspididae, six Eriococcidae, nine Monophlebidae, five Ortheziidae, 24 Pseudococcidae and three Rhizoecidae (Table 1). The percentage of species for each family is presented in Fig. 1. The three largest families represent 76.2% of the whole Coccomorpha fauna: Diaspididae (42.4%), Pseudococcidae (20.3%) and Coccidae (13.5%). The remaining fauna representing 23.8%, includes Asterolecaniidae, Conchaspididae, Dactylopiidae, Eriococcidae, Ortheziidae and Rhizoecidae, the most recently introduced family being Conchaspididae. Within the family Eriococcidae, a new endemic species within a new, endemic genus was recently described (Hodgson *et al.* 2014).

The family Diaspididae shows the largest number of recorded species. Brun & Chazeau (1986) catalogued 30 species occurring in New Caledonia, and the number is increased here to 50 species. Their small size and good camouflage facilitate greatly their accidental introduction on imported plants or plant materials. Many of them are of economic significance. Species in the family Monophlebidae were considered previously to belong to the larger Margarodidae *sensu* Morrison (1928), which has been divided into eleven separate families (Gullan & Cook 2007, Ben-Dov 2011). Two undescribed species belonging to this family are currently under description: *Drosicha* sp. (tribe Drosichini, three specimens in CXMNC) collected on *Rosa* sp. (Rosaceae) on the northern East Coast; and *Insulococcus* sp., collected on *Eugenia bullata*, an endemic Myrtaceae from the endangered sclerophyllous forest of the Western Coast of Grande Terre. Several recent introductions of Pseudococcidae are threatening New Caledonia. The family Coccidae includes some quite old incursions.

Ten families of Coccomorpha are represented so far in New Caledonia, with one hundred and eighteen (118) species currently known, of which 29 are endemic (24.8%). At the genus level, among the 71 recorded genera, only five (7%) are endemic (*Oacoccus* Williams, 2007 in Asterolecaniidae; *Chazeauana* Matile-Ferrero, 1988 and *Choneochiton* Hodgson, 2014, in Eriococcidae; *Insulococcus* Bhatti, 1991 and

Tessarobelus Montrouzier, 1864, in Monophlebidae). Only six families have endemic species, whereas the Coccidae, Conchaspididae and Dactylopiidae are only represented by exotic species (Table 1, Fig. 1).

In the context of New Caledonia, the endemism rate in Coccomorpha appears very low in comparison to other known rates, such as in phanerogams (77.8% *in* Morat *et al.* 2012), or in other insect groups, which vary from 38% in butterflies to 100% in cicadas (Chazeau 1993). Despite a low level of species radiation, there is a high proportion of endemics for archaeococcids (Monophlebidae and Ortheziidae) which reach 65% (nine species out of 14, plus two under current description in Monophebidae [Gullan *in prep.*]); also among the neoccoccids, there is a high level of endemism in the Eriococcidae (83%, with five out of six recorded species). According to Grimaldi & Engel (2005), at the world scale, the radiation of Sternorrhyncha has been linked to plant diversification, but this is not in concordance in New Caledonia, where despite the high level of plant endemism, there is a weak endemism rate. For instance, despite the presence of 7% of the world gymnosperm flora in New Caledonia (Jaffré *et al.* 2010), there is no endemic coccoid species associated with them. When compared to other analogous island countries (Table 1), New Caledonia appears to share major affinities with the Pacific area rather than Australasia, especially New Zealand; so the New Caledonia Coccomorpha exhibit a typical insular fauna, which is not the case for the vast majority of the New Caledonian insect groups. Several groups well represented elsewhere are lacking or have a low contribution (within all other taxonomic subranks through to species [Table 1]). However, despite being numerically dominant in the fauna, there are few neococcids (Diaspididae, Pseudococcidae, Coccidae and even Eriococcidae) in comparison with New Zealand, where these groups are well represented with high level of endemism (Macfarlane *et al.* 2010). This might be explained by the long period of isolation of the archipelago and the lack of self-dispersal capabilities of this group, leading to such disharmony (Carlquist 1974). Anyway, there is still an important need for some targeted collecting effort to improve knowledge of New Caledonian Coccomorphan biodiversity. Remote localities of native habitats may have been overlooked and some more endemic species may be discovered, as indicated by the trend in the discovery of new species (Fig. 4). Few endemic species were described until the 1970s (Fig. 4). From the 1980s to date, descriptions of endemic species have been more numerous (19 species), following an increase in biodiversity prospecting (Fig. 4).

Regarding the biogeographic origin of introduced species, it appears that 57.3% are of Oriental and Australasian origin (Fig. 3). Neotropical and cryptogenic (unknown origin) species are of similar proportions (18 and 19.1% respectively). Palaearctic species are few, probably because of a lack of climatic matching and suitability. Also, the recent arrival of many exotic Coccomorpha species may have presented a major resource to invasive ants in New Caledonia, in a context where the endemic ant fauna had few opportunities

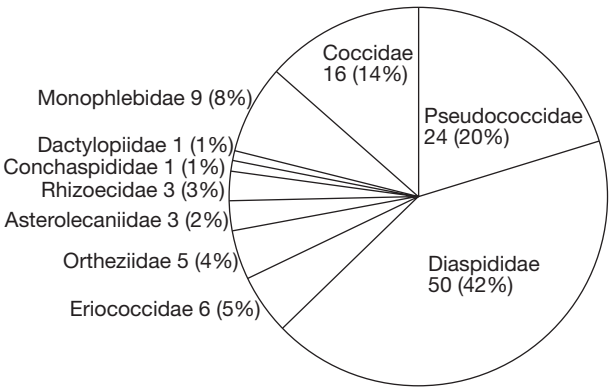

Fig. 2. — Contribution of each family to the New Caledonian Coccomorpha fauna. The number of species in each family is followed by the percentage of the Coccomorpha fauna that it represents.

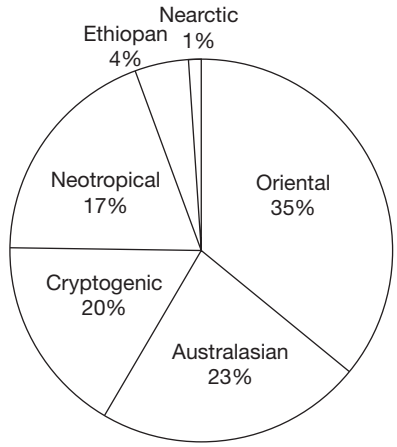

Fig. 3. — Biogeographic origins of the 89 exotic Coccomorpha species present in New Caledonia.

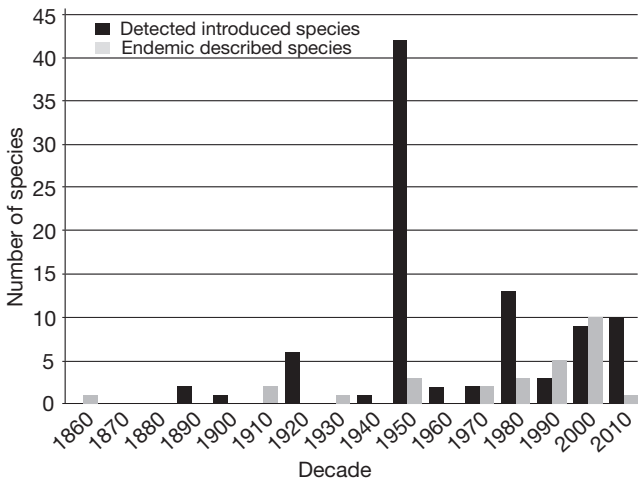

Fig. 4. — Records of endemic Coccomorpha species description, and recorded arrival of exotic species in New Caledonia, by decade, between 1864 and 2014.

to develop coevolutionary mutualisms with plant-sucking insects (Le Breton *et al.* 2005, Jourdan & Bourguet 2013). Then, the spread of exotic Coccomorpha should be regarded as a major concern, promoting a potential cascading effect with invasive ants.

Regarding the general biology of Coccomorpha, Cohic (1950) observed a latent period in their activities during the rainy season. Sexual activities seem to be observed at the end of the wet period in May-June, whereas the maximum numbers of individuals are encountered between July and November for most species, with a few exceptions (for example, *Ceroplastes rubens* increases its populations mainly during the rainy season in summer (Cohic 1958a)).

Regarding economic, environmental or quarantine significance among the 118 species, only species of Diaspididae, Pseudococcidae, Coccidae and Conchaspididae cause serious damage in New Caledonia. Within Coccidae, *Ceroplastes rubens*, *Coccus hesperidum*, *C. viridis*, and *Nipaecoccus viridis* are the main species of economic and environmental importance. Among the Diaspididae, important species are *Aonidiella aurantii*, *Chrysomphalus aonidum*, *Diaspidiotus perniciosus*, *Lepidosaphes beckii*, *Pseudoanidia trilobitiformis* and *Unaspis citri*. Within the Pseudococcidae, major economic species are *Dysmicoccus brevipes* and *D. neobrevipes*, which need to be surveyed as they are vectors of Pineapple Wilt Disease, a major threat for the pineapple industry but still absent from New Caledonia (Kohler *et al.* 1997). Finally, the recently and accidentally introduced species of Conchaspididae, *Conchaspis angraeci*, represents a serious threat to wild and cultivated plants for the whole archipelago.

Charles & Henderson (2002) remarked that armoured scale insect control techniques of today remain much the same as 100 years ago, with the use of summer oil sprays. A mean of four sprays per year in New Caledonian *Citrus* orchards is enough to control most Diaspididae, but the main difficult-to-control species remains *Unaspis citri*. Introduction of some parasitoids should be considered to enhance the control of this species. Mealybugs are more difficult to control, but *Cryptolaemus montrouzieri* is very efficient against several Pseudococcidae (e.g., *Ferrisia virgata* and *Pseudococcus* spp.). Introduction of several exotic natural enemies should be considered to develop classical biological control against several key pests. Some post-harvest trials using a very promising technique with high-pressure water (Woolf *et al.* 2011) are being conducted to remove scales, mealybugs and mites, especially from Tahitian limes, *Citrus aurantifolia* (Swingle) for export to New Zealand. Some field investigations are currently under way to improve the effectiveness of this treatment (Valérie Kagy pers. comm.).

As mentioned by Charles & Henderson (2002), Coccomorpha females are sedentary and flightless, meaning that all of the exotic species must have arrived in New Caledonia on imported crop and ornamental plants or plant parts such as nursery stock and imported fruits since European settlement. During the last 118 years (from 1897 to 2015), 89 exotic species have established at a rate of about one species every 1.3 years (Fig. 4). The example of *Conchaspis angraeci* illustrates that some New Caledonian citizens come back home with some plant parts illicitly in their luggage. Reinforcement of quarantine and biosecurity surveillance at the borders should be followed by heavy fines for offenders.

The present catalogue updates the list of the regulated quarantine pests that are relevant for fresh commodity exchanges between countries, and adds to the knowledge of the biodiversity of New Caledonia. A recent rise in fresh commodity and ornamental plant material imports into New Caledonia has resulted in introduction of an increased number of insect pests and this is particularly true for scales and mealybugs. More than fifty years ago, Cohic (1958a) noted the value and need to pay attention to plant imports, as several important pest species were not known from New Caledonia at that time. After the subsequent 57 years, some of those Coccomorpha pest species are now present: *Aspidiotus destructor*, *Diaspidiotus perniciosus*, *Ceroplastes destructor*, and from Cohic's list of threatening species only *Aonidiella citrina* remains absent from New Caledonia to date. Today, there are still many other threatening species; two of them are Cycad Aulacaspis Scale, *Aulacaspis yasumatsui* Takagi (Diaspididae) and Papaya Mealybug *Paracoccus marginatus* Williams & Granara de Willink (Pseudococcidae), which are regularly cited in countries of the region. Other threatening species were listed by Jourdan (2006). These threats are not only pertinent in natural environments, since invasive species are also of economic importance in agrosystems where new pest species can disturb the balance of IPM (Integrated Pest Management) strategies in several crops.

As was already stated 57 years ago by Cohic (1958a), the crucial requirement of a plant quarantine facility is still a current, important and worthy prerequisite for the country. The present updated list reminds us the necessity of this facility, not only for Coccomorpha, but for all other invertebrates that can threaten both New Caledonian agrosystems and highly biodiverse native ecosystems, especially when we know that the second most important threat to biodiversity is incursions of invasive species (Jourdan 2006; Jourdan & Loope 2006; Jourdan & Mille 2006). Finally, it would be worthwhile to develop biological control against this faunal group, as the main means of control – summer oil sprays – is safe for all the beneficial insects useful against scale insects and mealybugs.

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Fig. 5. — **A**, **B**, colony and single specimen of *Aspidiotus cochereaui* Matile-Ferrero & Balachowsky, 1973, on *Dracophyllum* sp. (Ericaceae) in Mont Kouakoué; **C**, **D**, colony and detailed specimens of *Choneochiton casuarinae* Hodgson, Mille & Cazères, 2014, on *Casuarina collina* (Casuarinaceae) in Pocquereux (La Foa County); **E**, **F**, colony and lateral view specimen of *Tessarobelus guerini* Montrouzier, 1864, on the introduced *Syzygium jambos* (Myrtaceae) in Sarraméa County; **G**, **H**, colony and detailed specimens of *Furcaspis cyphokentiae* Williams & Miller, 2006, on the palm *Cyphokentia* sp. (Arecaceae) in Mont Aoupinié (photographies S. Cazères, IAC). Scale bars: B, D, H, 1 mm; C, 2 mm; F, 10 mm; A, E, G, not to scale.

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