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A REVIEW OF THE IRISH JUMPING PLANT-LICE (HEMIPTERA: PSYLLOIDEA)

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Abstract

The Irish psyllid (Hemiptera) fauna is reviewed. A checklist is provided of the 50 known species with new distributional data. Five of the species (*Bactericera albiventris* (Foerster, 1848); *Cacopsylla* (*Hepatopsylla*) *hippophaes* (Foerster, 1848); *Neocraspedolepta subpunctata* (Foerster, 1848); *Psyllopsis distinguenda* Edwards, 1913 and *Spanioneura fonscolombii* Foerster, 1848) are new to Ireland while another one (*Cacopsylla* (*Thamnopsylla*) *alaterni* (Foerster, 1848)) requires confirmation. *Psylla* (*Psylla*) *betulae* (Linnaeus, 1758) is confirmed as an Irish species.

Key words: Psylloidea, Hemiptera, Ireland, jumping plant-lice, review, check list, new records, distribution.

Introduction

The suborder Sternorrhyncha of the Hemiptera contains four superfamilies viz. Aphidoidea, Aleyrodoidea, Psylloidea and Coccoidea, characterized by the position of the rostrum, which appears to arise from between the fore coxae. These superfamilies include many of the most serious pests of agricultural and horticultural plants. All the pest species cause direct feeding damage and some transmit plant diseases. The Psylloidea popularly known as psyllids or jumping plant-lice, comprise a group of around 3000 species that may be mistaken for leaf-hoppers belonging to the suborder Auchenorrhyncha. However the two-segmented tarsi, multi-segmented antennae and simplified wing venation will easily distinguish psyllids from leaf-hoppers (Martin and Webb, 1999). Reproduction is typically sexual although parthenogentic

reproduction has been recorded, or is suspected, for a small number of species (Hodkinson, 2009). Eggs are always laid, followed by five larval stages which are fully mobile. Some species develop within bud, flower, leaf, stem or root galls while others develop under a secreted protective cover called a lerp (Hodkinson, 2009).

Foerster (1848) recorded 18 species new to Ireland based on specimens sent to him by A. H. Haliday. Subsequent workers on the group are mentioned in the text. The present paper presents data on 50 species. Five species (*Bactericera albiventris* (Foerster, 1848); *Cacopsylla* (*Hepatopsylla*) *hippophaes* (Foerster, 1848); *Neocraspedolepta subpunctata* (Foerster, 1848); *Psyllopsis distinguenda* Edwards, 1913 and *Spanioneura fonscolombii* Foerster, 1848) are new to Ireland, while presence of another one (*Cacopsylla* (*Thamnopsylla*) *alaterni* (Foerster, 1848)) requires confirmation. *Psylla* (*Psylla*) *betulae* (Linnaeus, 1758) is confirmed as an Irish species. New distribution records are included for other species based on material collected by the senior author and on his identification of unnamed or misnamed specimens in the National Museum of Ireland. The identification of other historic material in NMI was confirmed and where of note, records are given. Eight species (16% of the Irish psyllid fauna) are non-native introductions that have become naturalized. Specimens were determined using Hodkinson (2007), Hodkinson and Hollis (1980, 1987), Hodkinson and White (1979), Martin and Malumphy (1995), Ossianilsson (1992) and White and Hodkinson (1982). Many of the Irish species are illustrated in an online identification guide to British bugs (http://www.britishbugs.org.uk/index.html) and in a pictorial key to European *Cacopsylla* species associated with Rosaceae (http://www.psyllidkey.eu/index.html). Where possible, the nomenclature of the plants follows Stace (1995). The authorities are given for plant species not in Stace (*op. cit.*).

The following abbreviations are used in the text: AHH – A. H. Haliday; AWS – A. W. Stelfox; CIC – C. I. Carter; CM – Chris Malumphy; CR - Colm Ronayne; EFB – E. F. Bullock; GHC – G. H. Carpenter; JNH – J. N. Halbert; JPOC – J. P. O'Connor; MAOC – M. A. O'Connor; MPC – M.-P. Chauzat; NMI – National Museum of Ireland; WFJ – W. F. Johnson. Square brackets [] indicate that the collector's identity has been recognised from the hand-writing on the data labels.

A collection of voucher specimens (pinned and spirit) will be presented to the National Museum of Ireland.

PSYLLOIDEA

PSYLLIDAE LATREILLE, 1807

***Aphalara exilis* (Weber and Mohr, 1804)**

Aphalara species are often difficult to identify reliably, and examination of the male genitalia is essential in some cases. The *A. exilis* species group was comprehensively revised by Burckhardt and Lauterer (1997).

CARLOW: St Mullins (S7238), ♀, 2 July 2011, along River Barrow, JPOC.

Aphalara exilis was recorded from Cos Cork, Dublin, Meath, Waterford and Wexford (Halbert, 1907; Helden *et al*., 2008). The following specimens are in NMI:- **KERRY**: Ardagh, Killarney, ♀, 1 November 1930, EFB; Castlemaine, ♂2♀♀, July 1932, EFB; **WICKLOW**: Bray, 2♂♂, JNH. The host plants are common sorrel *Rumex acetosa* and broad-leaved dock *R. obtusifolius* (Burckhardt and Lauterer, 1997). The species is widespread in Europe and Asia (Ossianilsson, 1992).

***Aphalara polygoni* Foerster, 1848**

Aphalara polygoni was recorded by Foerster (1848) based on Haliday material found on sheep's sorrel *Rumex acetosella*. The following specimens are in NMI:-**DUBLIN**: Howth, ♂, 2 May 1909, 2♀♀, 19 September 1909, JNH. The reported host plants are knotgrasses *Polygonum* spp. The species is widespread in Europe and also occurs in China (Ossianilsson, 1992; Burckhardt, 2009).

***Aphalara ulicis* Foerster, 1848** (Fig. 1)

Aphalara ulicis was recorded by Foerster (1848) based on a Haliday specimen (♀) found on gorse *Ulex*. Burckhardt and Lauterer (1997) also report the species from Ireland. The host plants are docks *Rumex* spp. (Burckhardt and Lauterer, 1997; Jerinić-Prodanović, 2010). The species has been reported from Austria, Belgium, Britain, Denmark, Finland, Germany, Norway, Romania, Russia, Slovakia, Sweden and the Czech Republic (Burckhardt, 2009).

***Arytaina genistae* (Latreille, 1804)** (Fig. 2)

Synonym: *Arytaena genistae* Latreille, 1804

WEXFORD: Ferrycarrig (T0022), ♀♀, 11 June 1990, swept from vegetation beside the River Slaney, JPOC; **WICKLOW**: Glendalough (T1196), 2♂♂, 11 September 1990, JPOC.

Arytaina genistae was recorded from Cos Kerry, Wexford and Wicklow by Halbert (1935). The following specimens are in NMI:- **WICKLOW**: Greystones, ♂3♀♀, 22 August 1938, JNH; Roundwood, 2♂♂2♀♀, September and 1 October 1909, JNH. The host plants are *Cytisus austriacus* L., *C. heufelli* Wierzb. ex Griseb. and Schenk, broom *C. scoparius*, Dyer's greenweed *Genista tinctoria*, and perhaps gorse *Ulex europaeus*. The species is widespread in Europe and has been introduced into North America (Ossianilsson, 1992).

***Arytainilla spartiophila* (Foerster, 1848)**

Synonym: *Psylla spartii* Guérin-Méneville, 1843

CARLOW: Bahana Woods (S7239), 2♂♂2♀♀, 14 June 1991, JPOC and MAOC; **WEXFORD:** Ferrycarrig (T0022), ♂♂, 11 June 1990, swept from vegetation beside the River Slaney, JPOC.

Arytainilla spartiophila was recorded as *Arytaina spartii* by Foerster (1848) based on Haliday material and subsequently as *Psylla spartii* by Halbert (1935). The following specimens are in NMI:- **WICKLOW**: Drumgoff, 2♂♂2♀♀, 31 May 1896, JNH; Glenmalure ♂♀, JNH. The host plant is broom *Cytisus scoparius*. The species occurs in southern and central Europe, Britain and Denmark. The species has been introduced into the Nearctic (Malumphy *et al.*, 2009).

***Baeopelma foersteri* (Flor, 1861)**

CARLOW: St Mullins (S7238), ♂, 19 June 1991 and 2♂♂3♀♀, 2 July 2011, off *Alnus*, JPOC; **LEITRIM:** Lough Melvin (G9250), ♀, 7 August 1989, JPOC; **WATERFORD:** Belle Lake (S6605), ♀, 11 June 1991, JPOC; **WEXFORD:** near Fethard (S7905), ♂♀, 10 June 1990, JPOC; John F. Kennedy Park (S7319) 2♂♂3♀♀, 29 June 2011, off *Alnus*, JPOC.

Baeopelma foersteri was recorded as either *Psylla foersteri* or *P. forsteri* from Coolmore, Co. Donegal, Bull Island, Co. Dublin and Westport, Co. Mayo (Johnson *et al.*, 1894; Halbert,

1912; Speight and Healy, 1977). The following specimens are in NMI:- **CORK**: Fermoy, ♂♀, July 1894, JNH; **GALWAY**: no locality, ♂, JNH; **WICKLOW**: Bray, 2♀♀, July 1894, JNH. The host plants are alders *Alnus* spp. The species is widespread in the Palaearctic region (Ossianilsson, 1992).

***Cacopsylla* (*Cacopsylla*) *mali* (Schmidberger, 1836)**

Synonyms: *Psylla aeruginosa* Foerster, 1848; *Psylla occulta* Foerster, 1848

DUBLIN: Trinity College (O1634), Dublin City, ♂♂♀♀, 19 May 2011, numerous adults and nymphs on *Malus* sp., JPOC.

Cacopsylla mali was recorded as *Psylla mali*, *P. aeruginosa* and *P. occulta* by Foerster (1848) based on Haliday material. Walker (1852) also recorded it as *Psylla aeruginosa.* Subsequently Carpenter (1909, 1913) reported *Psylla mali* from Cos Armagh, Dublin, Fermanagh, Kerry and Tyrone, stating that during the spring of 1908 and May 1912, complaints of damage were reported from many parts of the country and specimens were received from the listed counties. Halbert (1935) lists the species as *Psylla mali* Schindbg var. *viridissima* Scott. The following specimens are in NMI:- **MAYO**: Belclare, 3♂♂, JNH. The host plants are apples *Malus* spp. *C. mali* is distributed throughout the Palaearctic region and was introduced into the Nearctic region and Australia (Malumphy *et al.*, 2009).

***Cacopsylla* (*Cacopsylla*) *peregrina* (Foerster, 1848)**

CARLOW: Bahana Woods (S7239), ♀, 14 June 1991, JPOC and MAOC; **DUBLIN:** Castleknock (O0837), numerous ♂♂♀♀, 21 May and 20 June 2011, on *Crataegus monogyna* in a suburban garden, JPOC; North Bull Island (O2337), numerous ♂♂♀♀, 27 July 2011, swept off a stunted *C. monogyna* on the sand-dunes, JPOC; **WESTMEATH:** Lough Derravaragh (N4066), ♂, 30 May 1990, JPOC; **WEXFORD:** Baginbun Head (S8003), ♂♀, 13 August 2011, JPOC; Curracloe (T1127), ♂♀, 18 June 1991, JPOC.

Cacopsylla peregrina was recorded as *Psylla peregrina* from Coolmore, Co. Donegal, Lambay Island, Co. Dublin and Westport, Co. Mayo (Johnson *et al*., 1894; Halbert, 1907, 1912). The following specimens are in NMI:- **DONEGAL**: Coolmore, ♂♀, WFJ; **MAYO**: Wesport, ♂3♀♀, JNH (♂♀ seen by Edwards). The host plants are hawthorns *Crataegus* spp.

The species occurs throughout the Palaearctic region (Malumphy *et al*., 2009).

***Cacopsylla* (*Cacopsylla*) *sorbi* (Linnaeus, 1758)**

DUBLIN: Castleknock (O0837), numerous ♂♂♀♀, 28 May 2011, on a *Sorbus aucuparia* in a suburban garden, JPOC; **KERRY:** Galway's Bridge (V9180), Killarney, ♂, 9 September 1981, JPOC; **WEXFORD:** Curracloe (T1127), ♀, 18 June 1991, JPOC; Slieve Coiltia (S7319) near the John F. Kennedy Park, ♂♀♀, 14 June 1990, JPOC.

Cacopsylla sorbi was recorded as *Psylla sorbi* from Ireland by Hodkinson and White (1979) and from Cos Meath, Wexford and Wicklow by Helden *et al*. (2008). The following specimens are in NMI:- **DUBLIN**: Phoenix [Park], 3♂♂♀, JNH. The host plants are rowan *Sorbus aucuparia* and the Amur mountain ash *S. amurensis* Koehne. The species occurs in Austria, Britain, the former Czechoslovakia, Germany, Poland, Russia and Switzerland (Ossianilsson, 1992)

***Cacopsylla* (*Hepatopsylla*) *ambigua* (Foerster, 1848)**

CARLOW: St Mullins (S7238), 3♂♂6♀♀, 2 July 2011, off *Salix* sp. along River Barrow, JPOC; **CAVAN:** Deerpark Woods (N5987), Virginia, ♂4♀♀, 19 July 2011, off *Salix* sp., JPOC; **WEXFORD:** Ferrycarrig (T0022), ♂, 11 June 1990, swept from vegetation beside the River Slaney, JPOC; Oaklands Wood (S7125), 2♂♂6♀♀, 1 July 2011, off *Salix* sp., JPOC.

Cacopsylla ambigua was recorded as *Psylla ambigua* by Hodkinson and White (1979). The following specimen is in NMI:- **KERRY**: Muckross, ♂, JNH. The host plants are various species of willow *Salix*. The species is widespread in Europe and also occurs in Greenland (Ossianilsson, 1992; Burckhardt, 2009).

***Cacopsylla* (*Hepatopsylla*) *brunneipennis* (Edwards, 1896)**

Cacopsylla brunneipennis was recorded as *Psylla brunneipennis* by Hodkinson and White (1979). The host plants are various species of willow *Salix*. The species occurs in Austria, the former Czechoslovakia, Denmark, Hungary, Norway, Romania, Russia, Sweden, Switzerland and the Ukraine (Ossianilsson, 1992).

***Cacopsylla* (*Hepatopsylla*) *hippophaes* (Foerster, 1848)** **New to Ireland**

DUBLIN: North Bull Island (O2337), numerous ♂♂♀♀, 27 July 2011, swept off *Hippophae*

rhamnoides on the causeway, JPOC; **WEXFORD**: Rosslare (T1014), ♂♂♀♀, 12 August 2011 swept off *H. rhamnoides*, JPOC.

The host plant is sea-buckthorn *Hippophae rhamnoides*. The species occurs in Austria, Britain, Denmark, France, the Netherlands, Italy, Poland, Spain, Sweden, Switzerland, the Caucasus and Middle Asia (Ossianilsson, 1992).

***Cacopsylla* (*Hepatopsylla*) *pulchra* (Zetterstedt, 1838)**

Synonyms: *Psylla pineti* Flor, 1861; *Psylla nigrita* (Zetterstedt, 1828)

CLARE: Fanore (M1308), ♂, 1 June 1984, sand-dunes, JPOC; Kilshanny (R1292), ♂, 3 June 1992, JPOC; **DUBLIN**: Bull Island (O2438), ♂, 14 September 1985, JPOC; **WATERFORD:** Ballin Lough (S4403), Kill, ♀, 19 June 1991, JPOC; Belle Lake (S6605), ♀, 11 June 1991, JPOC; **WEXFORD:** Coolbawn House (S8237), ♂, 8 May 1991, JPOC and MAOC; Curracloe (T1127), ♀, 18 June 1991, JPOC; Killoughrim Forest (S8941), ♂, 4 April 1986, JPOC and MAOC.

Cacopsylla pulchra was reported as *Psylla pineti* by Halbert (1912) from Achill and Westport, Co. Mayo and as *Psylla nigrita* from Ireland by Halbert (1935). The following specimen is in NMI:- **CORK**: Glandore, ♂2♀♀, 12 June 1909 [JNH]; **WICKLOW**: Bray, ♂, September 1894, JNH. The host plants are various species of willow *Salix*. The species is widespread in Europe and also occurs in Japan (Ossianilsson, 1992).

***Cacopsylla* (*Hepatopsylla*) *pyri* (Linnaeus, 1758)**

Cacopsylla pyri was recorded as *Psylla pyri* by Foerster (1848) based on Haliday material. The host plants are pear *Pyrus communis* and *P. elaeagnifolia* Kotschyana. The species is widespread in Europe. It also occurs in the Caucasus, Georgia, the Middle Asia and China (Ossianilsson, 1992).

***Cacopsylla* (*Hepatopsylla*) *pyricola* (Foerster, 1848)**

Synonym: *Psylla apiophila* Foerster, 1848

Cacopsylla pyricola was reported as *Psylla apiophila* by Foerster (1848) based on Haliday material. The host plants are pear *Pyrus communis* and wild pear *P. pyraster*. The species is widespread in Europe and also occurs in Argentina, Canada, Iran, Israel, Japan, Korea and the

U.S.A (Ossianilsson, 1992).

***Cacopsylla* (*Hepatopsylla*) *saliceti* (Foerster, 1848)**

Synonym: *Psylla salicicola* Foerster, 1848 partim

CLARE: Kilshanny (R1292), 2♂♂, 3 June 1992, hedgerows, JPOC; Lough Bunny (R3696), ♂, 28 May 1998, JPOC; **WATERFORD**: Belle Lake (S6605), ♂ 11 June 1991, JPOC; **WEXFORD:** Baginbun Head (S8003), ♂♂♀♀, 13 August 2011, off *Salix*, JPOC; Ferrycarrig (T0022), ♂, 11 June 1990, swept from vegetation beside the River Slaney, JPOC.

Cacopsylla saliceti was recorded as *Psylla saliceti* by Foerster (1848) based on Haliday material. Subsquently Halbert (1912) reported it as *Psylla saliciicola* from Clare Island and Louisburgh, Co. Mayo. The following specimens are in NMI:- **GALWAY**: Ross, ♂, JNH; **MAYO**: Clare Island, ♂♀, 11 June 1909 [JNH] (labelled as *P. betulae*); **SLIGO**: Glencar, ♂, JNH; Lissadell, ♂, JNH. The host plants are various species of willow *Salix*. The species is found throughout Europe (Hodkinson and White, 1979).

***Cacopsylla* (*Thamnopsylla*) *alaterni* (Foerster, 1848) Requires confirmation as an Irish species**

Cacopsylla alaterni was recorded as *Psylla alaterni* by Foerster (1848) based on two ♂♂ sent by Haliday under the ms name *alaterni*. Walker (1852) also mentioned Haliday material. The host plant is *Rhamnus alaternus* popularly known as Mediterranean or Italian buckthorn. The species is known from the Balearic and Canary Islands, England, France and Italy including Sardinia and Sicily (Hodkinson and White, 1979; Burckhardt, 2009).

The host plant is a native of the Mediterranean region. Although it has been cultivated in British gardens since 1629, there appears to be only one subsequent record of *Cacopsylla alaterni* from it in the British Isles. It is known that Haliday spent most of the years 1841-1848 in Italy (Nash and O'Connor, 2011). It is significant that he sent the specimens with a ms name. The material was probably collected in Italy and recognized there as a new species. Haliday normally did not label his specimens with locality data and it is very likely that he included Italian *Cacopsylla alaterni* with Irish psyllids collected in 1848. It has been assumed by later workers that because they were sent from Ireland, they were actually Irish specimens. This

would explain the curious distribution. *Cacopsylla alaterni* requires confirmation therefore as an Irish species.

***Cacopsylla* (*Thamnopsylla*) *crataegi* (Schrank, 1801)**

Synonym: *Psylla costatopunctata* Foerster, 1848

CLARE: Lough Bunny (R3696), ♂, 21 May 1985, JPOC and MAOC.

Cacopsylla crataegi was recorded as *Psylla costatopunctata* and *P. crataegi* Scopoli by Foerster (1848) based on Haliday material. Halbert (1935) listed it as as *Psylla crataegi*. The host plants are hawthorns *Crataegus* spp. The species is widely distributed in Europe and also occurs in Morocco, the Russian Far East and northern India (Ossianilsson, 1992).

***Cacopsylla* (*Thamnopsylla*) *melanoneura* (Foerster, 1848)** (Fig. 3)

Synonym: *Psylla costalis* Flor (partim)

CARLOW: Bahana Woods (S7239), ♀, 14 June 1991, JPOC and MAOC; **DUBLIN:** Castleknock (O0837), numerous ♂♂♀♀, 21 May and 20 June 2011, on *Crataegus monogyna* in a suburban garden, JPOC; St Catherines Wood (O0136), ♂, 11 May 1991, JPOC; **WATERFORD**: hill near Passage East (S6910), ♂♀, 12 June 1991, JPOC; **WEXFORD**: Craywell, New Ross (S7228), ♂♀♀, 28 June 2011, JPOC; Curracloe (T1127), ♂, 18 June 1991, JPOC and MAOC.

Cacopsylla melanoneura was recorded as *Psylla melanoneura* by Foerster (1848) based on Haliday material and subsequently as *Psylla costalis* from Coolmore, Co. Donegal by Johnson *et al.* (1894). Helden *et al*. (2008) reported it from Co. Wexford. The host plants are hawthorns *Crataegus* spp., apples *Malus* spp. and pears *Pyrus* spp. The species occurs throughout the Palaearctic region (Malumphy *et al*., 2009).

***Cacopsylla* (*Thamnopsylla*) *pruni* (Scopoli, 1763)**

Synonym: *Psylla fumipennis* Foerster, 1848

WEXFORD: Mount Brandon House Hotel (S7126), New Ross, ♂, 5 July 2011, JPOC; **WICKLOW**: Knocksink Wood (O2117), ♀, 10 May 1984, JPOC.

Cacopsylla pruni was recorded as *Psylla fumipennis* by Foerster (1848) based on Haliday material. Subsequently, Halbert (1935) reported it as *Psylla pruni*. The following specimen is in

NMI:- **GALWAY**: Clonbrock, ♂, JNH. The host plants are plum *Prunus domestica*, bird cherry *P. padus* and blackthorn *P. spinosa.* The species is widespread in Europe and also occurs in the Caucasus, Georgia and Siberia in Russia (Ossianilsson, 1992).

***Cacopsylla* (*Thamnopsylla*) *rhamnicola* (Scott, 1876)**

Cacopsylla rhamnicola was recorded as *Psylla rhamnicola* by Hodkinson and White (1979). The host plant is buckthorn *Rhamnus cathartica*. The species occurs in Britain, the Caucasus, the former Czechoslovakia, Denmark, Georgia, Hungary, Kazakhstan, Mongolia, Russia, Spain, Sweden and Switzerland (Ossianilsson, 1992).

***Chamaepsylla hartigii* (Flor, 1861)**

DUBLIN: Castleknock (O0837), ♂, 16 June -6 July 1996, Malaise trap, JPOC; same locality, numerous ♂♂♀♀, 31 May 2011, on a *Betula* sp. in a suburban garden, JPOC; **KERRY:** Dinish (V9385), Killarney, ♂, 31 May 1995, JPOC; **WEXFORD:** near New Ross (S7125), ♂, 13 July 1991, JPOC.

Chamaepsylla hartigii was recorded as *Psylla hartigii* by Halbert (1912) from Belclare, Co. Mayo. The following specimens are in NMI:- **WICKLOW**: Drumgoff, ♀, 31 May 1896, JNH (misidentified as *Arytainilla spartiophila*); **MAYO**: Westport, ♀, June 1909, JNH. The host plants are birches *Betula* spp. The species is widely distributed in Europe and also occurs in Japan and North America (Ossianilsson, 1992).

***Craspedolepta flavipennis* (Foerster, 1848)**

Craspedolepta flavipennis was recorded by Foerster (1848) based on Haliday material. Hodkinson and White (1979) state that it is rare here and only known from the south of the island. The host plants are Compositae. The species occurs in central and northern Europe, Armenia, Georgia and Russia including Dagestan and Siberia (Hodkinson and White, 1979).

***Craspedolepta nebulosa* (Zetterstedt, 1828)** (Fig. 4)

Craspedolepta nebulosa was recorded from Virginia, Co. Cavan and Fiddown, Co. Waterford by O'Connor (2001). The host plant is rosebay willowherb *Chamerion angustifolium*. *C. nebulosa* is a trans-Palaearctic species that occurs from Western Europe to the Russian Far East, and has been introduced to North America (Ossianilsson, 1992).

***Craspedolepta nervosa* (Foerster, 1848)**

Synonym: *Aphalara nervosa* Foerster, 1848

KERRY: Banna (Q7522), numerous nymphs, 11 August 2004, on a swollen flower head of *Achillea* on the sand-dunes, JPOC.

Craspedolepta nervosa was recorded as *Aphalaria nervosa* from Cos Cork, Dublin, Meath and Wicklow by Halbert (1935). The following specimen is in NMI:- **MEATH**: Laytown, ♀, JNH. The host plants are yarrow *Achillea millefolium*, sneezewort *A. ptarmica* and creeping thistle *Cirsium arvense*. The species is widespread in Europe and also occurs in the Asiatic part of Russia, Iraq and Mongolia (Ossianilsson, 1992).

***Craspedolepta sonchi* (Foerster, 1848)**

Synonym: *Aphalaria picta* Zetterstedt, 1828

Craspedolepta sonchi was recorded from as *Aphalaria picta* from Castlebar and Westport, Co. Mayo by Halbert (1912). The following specimens are in NMI:- **LOUTH**: no locality, ♀, JNH (specimen was in the Edwards Collection); **MAYO**: Coolbarren, ♂, July 1911, JNH. The host plants are autumn hawkbit *Leontodon autumnalis*, crown daisies *Chrysanthemum* spp., hawk's-beards *Crepis* spp., ragworts *Senecio* spp., hawkweeds *Hieracium* spp., cat's-ears *Hypochoeris* spp. and sow-thistles *Sonchus* spp. The species has been reported from Armenia, Denmark, England, Georgia, Norway, Sweden and Russia including Dagestan and Siberia in Russia (Ossianilsson, 1992).

***Livia junci* (Schrank, 1789)** (Fig. 5)

Synonym: *Livia juncorum* (Latreille, 1798)

WICKLOW: Calary Lower (O2311), 2♂♂, 23 September 1989, JPOC and MAOC.

Livia junci was reported as *Livia juncorum* from Castlebar, Clare Island and Westport, Co. Mayo by Halbert (1912) and subsequently from the Kerry Way, Kenmare uplands, Co. Kerry by O'Connor *et al.* (2008). The following specimens are in NMI:- **DUBLIN**: Lucan, ♂, JNH; Raheny, ♂2♀♀, JNH; **GALWAY**: Woodford, ♂, JNH; **SLIGO**: Ballysadare, 2♀♀, JNH; Lissadell, ♀, JNH; **WICKLOW**: Lough Dan, ♀, 28 September 1909, JNH. The host plants are various species of rushes *Juncus*. The species is widespread in Europe and also occurs in

Algeria, Iran, India, the Middle East and Siberia (Ossianilsson 1992).

***Livilla ulicis* Curtis, 1836**

Livilla ulicis was recorded from Co. Wicklow by Halbert (1935). The following specimen is in NMI:- **WICKLOW**: Vale of Avoca, ♀, AHH. The food plants are greenweeds *Genista*, brooms *Cytisus* and gorses *Ulex* spp. The species occurs in Britain, central and southern Europe (Hodkinson and White, 1979).

***Neocraspedolepta subpunctata* (Foerster, 1848)** **New to Ireland**

Synonym: *Craspedolepta subpunctata* (Foerster, 1848)

CAVAN: Deerpark Woods (N5987), Virginia, ♂, 13 July 2011, off *Chamerion angustifolium*, JPOC; **WEXFORD:** Craywell (S7228), New Ross, 2♀♀, 28 June 2011, off *C. angustifolium* on a steep hill, JPOC; John F. Kennedy Park (S7319) 3♂♂6♀♀, 29 June 2011, off *C. angustifolium*, JPOC.

The host plant is rosebay willowherb *Chamerion angustifolium*. *Neocraspedolepta subpunctata* has been recorded from central Europe, England, Italy, Scandinavia and the former U.S.S.R. It also occurs in North America (Ossianilsson, 1992).

***Psylla* (*Psylla*) *alni* (Linnaeus, 1758)** (Figs 6-7)

Synonyms: *Psylla fuscinervis* Foerster, 1848; *Psylla heydeni* Foerster, 1848

CARLOW: St Mullins (S7238), 2♂♂♀, 2 July 2011, off *Alnus* beside the River Barrow, JPOC; **CAVAN:** Deerpark Woods (N5987), Virginia, ♂♂♀♀, 13 July 2011, JPOC; **DUBLIN**: Castleknock (O0837), ♂ and numerous nymphs, 21 May 2011, on planted *Alnus* sp. near St Brigid's GAA club, JPOC; Clondalkin (O0731), ♂, 7 June 1981, JPOC; **KERRY**: Ross Castle (V9488), Killarney, ♂, 16 September 1981, JPOC; **SLIGO**: Drumcliffe River near Rathcormack (G6742), 2♂♂, 28 August 1992, JPOC; **WEXFORD**: John F. Kennedy Park (S7319), ♂, 29 June 2011, JPOC.

Psylla alni was recorded as *Psylla heydeni* and *P. fuscinervis* by Foerster (1848) based on Haliday material. Subsequently, it was reported from Westport, Co. Mayo (Halbert, 1912). The following specimens are in NMI:- **CORK**: Fermoy, ♂, July 1894, JNH; **DONEGAL**: Ardara, 32♂♂♀, two of the males are dated 8 July 1892, WFJ; **DUBLIN**: no locality, ♀, 25 August

1895, JNH; Donabate, ♂, JNH; **MAYO**: Belclare, 2♀♀, July 1910, JNH; **WICKLOW**: Roundwood, ♂, 1 October 1909, JNH (misidentified as *Arytaina genistae*). The food plants are various species of alder *Alnus*. The species is widespread in the Palaearctic region (Ossianilsson, 1992).

***Psylla* (*Psylla*) *betulae* (Linnaeus, 1758)** **Confirmed as an Irish species**

KILKENNY: Woodstock (S6336), Inistioge, 2♀♀, 8 August 2011 and ♂6♀♀, 16 August 2011, off *Betula pubescens*, JPOC.

Psylla betulae was recorded from Clare Island, Co. Mayo by Halbert (1912). However, the named voucher specimens in the National Museum of Ireland both belong to *Cacopsylla saliceti*. Authentic Irish specimens have now been found as listed above. The host plants are silver birch *Betula pendula* and downy birch *B. pubescens*. The species has been recorded from Austria, Britain, Estonia, Latvia, Poland and the former U.S.S.R. It also occurs in Japan and Mongolia (Ossianilsson, 1992).

***Psylla* (*Asphagidella*) *buxi* (Linnaeus, 1758)** (Fig. 8)

CARLOW: Altamont Gardens (S8665), 2♂♂2♀♀, 9 July 2011, off *Buxus sempervirens*, JPOC; **DUBLIN**: Raglan Road (O1732), numerous ♂♂♀♀, 3 June 2011, on *B. sempervirens*, JPOC; **MONAGHAN**: Nuremore Hotel (H8502), 28 April 2011, cabbage galls and nymphs on *B. sempervirens* in the grounds of the hotel, JPOC.

Psylla buxi was recorded by Foerster (1848) based on Haliday material. Subsequently, it was reported from Muckross House, Killarney, Co. Kerry and Clare Island, Co. Mayo (Halbert, 1912; O'Connor *et al.*, 2008). The following specimens are in NMI:- **DOWN**: Donard Demense, 2♂♂2♀♀, August 1902, on box [JNH]; **DUBLIN**: Dundrum, 5♂♂♀, June 1900, GHC; **MAYO**: Westport, ♂3♀♀, JNH. The food plant is box *Buxus sempervirens*. The species is widespread in Europe (Ossianilsson, 1992).

***Psyllopsis discrepans* (Flor, 1861)** (Fig. 9)

CARLOW: Bahana Woods (S7239), 3♀♀, 14 June 1991, JPOC and MAOC.

Psyllopsis discrepans was recorded from Co. Wexford by Helden *et al.* (2008). The following specimen is in NMI:- **WICKLOW**: Avoca, ♀, JNH. It had been misidentified as

Psyllopsis fraxinicola. The host plants are ashes *Fraxinus* spp. The species occurs in central and eastern Europe, Armenia, Britain, Georgia, Scandinavia and Tajikistan. It has been introduced into the Nearctic region (Malumphy *et al.*, 2009).

***Psyllopsis distinguenda* Edwards, 1913** **New to Ireland**

DUBLIN: no locality, 2♂♂ (NMI) (misidentified as *Psyllopsis fraxini*); **GALWAY:** Clonbrock, ♂, JNH (NMI) (misidentified as *Psyllopsis fraxini*); **KERRY**: Killarney, 3♂♂, 3 July 1930, lake side, EFB (NMI); **WEXFORD:** John F. Kennedy Park (S7319), ♂♀, June 1991, JPOC.

The food plants are ashes *Fraxinus* spp. and the species is widely distributed in central and western Europe (Hodkinson and White, 1979; Burckhardt, 2009).

***Psyllopsis fraxini* (Linnaeus, 1758)**

CAVAN: Deerpark Woods (N5987), Virginia, ♂, 19 July 2011, JPOC; **MEATH**: Kilmessan (N8858), nymphs, 26 May 2011, on *Fraxinus excelsior*, JPOC; **WEXFORD**: John F. Kennedy Park (S7319) ♂2♀♀, 29 June 2011, off *Fraxinus*, JPOC; **WICKLOW**: Knocksink Wood (O2117), ♂♂♀♀, 6-10 July 1995, CR.

Psyllopsis fraxini was recorded as *Psylla fraxini* by Foerster (1848) based on Haliday material. Subsequently it was recorded from Westport, Co. Mayo by Halbert (1912). The galls of *Psyllopsis fraxini* were found at Ailwee Cave and Mullagh More, Co. Clare, Coole Park near Gort, Co. Galway and Templenoe near Kenmare, Co. Kerry (O'Connor *et al*., 2008). Hodkinson and White (1979) stated that it was common throughout Ireland. The following specimens are in NMI:- **CORK**: Fermoy, ♂, JNH; **KERRY**: Killarney, ♂, 22 September 1930, lake side, EFB. The food plants are ashes *Fraxinus* spp. The species occurs in Europe and Asia Minor. It has been introduced into North America (Ossianilsson, 1992).

***Psyllopsis fraxinicola* (Foerster, 1848)**

CAVAN: Deerpark Woods (N5987), Virginia, 3♂♂2♀♀, 13 and 19 July 2011, JPOC; **WEXFORD:** Craywell (S7228), New Ross, ♀, 29 June 2011, JPOC; Mount Brandon House Hotel (S7126), New Ross, ♂♀, 5 July 2011, JPOC; Oaklands Wood (S7125), ♂3♀♀, 28 June 2011, swept off *Fraxinus excelsior*, JPOC; Stoneyford (T1009) near Broadway, ♂, 18 August

2011, JPOC; **WICKLOW:** Knocksink Wood (O2117), ♂♂♀♀, 6-10 July 1995, CR.

Psyllopsis fraxinicola was recorded from Ireland by Hodkinson and White (1979). The following specimens are in NMI:- **DONEGAL**: Portmore, ♂♀, JNH. The host plants are ashes *Fraxinus* spp. The species occurs in Europe, North Africa, Armenia, Kazakhstan, Georgia and Turkey. It has been introduced into the Nearctic region (Malumphy *et al.*, 2009).

***Spanioneura fonscolombii* Foerster, 1848** (Fig. 10) **New to Ireland**

CARLOW: Altamont Gardens (S8665), ♂, 9 July 2011, off *Buxus sempervirens*, JPOC; **DUBLIN:** Raglan Road (O1732), numerous ♂♂♀♀, 3 June 2011, on *B. sempervirens*, JPOC.

The food plant is box *Buxus sempervirens*. The discovery of *Spanioneura fonscolombii* in Ireland is interesting as it has spread northwards in Britain and become much more common in England in recent years. Indeed, it is often now more common on box than *P. buxi*. The species has been recorded from Belgium, Britain, France, Italy, Luxembourg, Spain and Switzerland (Hodkinson and White, 1979; Burckhardt, 2009).

***Strophingia ericae* (Curtis, 1835)** (Fig. 11)

WATERFORD: Mahon Falls area (S3009), ♂♂♀♀, 3 July 1989, JPOC; Nier Valley (S2417), ♀, 13 August 1987, JPOC; **WEXFORD**: Slieve Coiltia (S7319) near the John F. Kennedy Park, ♂2♀♀, 4 July 2011, JPOC.

Strophingia ericae was recorded as *Rhinocola ericae* by Foerster (1848) based on Haliday material and subsequently by Halbert (1912) from Croaghpatrick, Co. Mayo. The following specimens are in NMI:- **MAYO**: Cromaglaun, 4♀♀, JNH; **WICKLOW**: no locality, 2♀♀; Lugnaquilla, ♀, 30 May 1896 [GHC]. The food plants are heather *Calluna vulgaris* and heaths *Erica* spp. The species is widely distributed in Europe (Ossianilsson, 1992).

SPONDYLIASPIDAE

***Ctenarytaina eucalypti* (Maskell, 1890)** (Figs 12 and 13)

Ctenarytaina eucalypti was recorded by Hodkinson and White (1979). Subsequently, it was reported on silver-leaved mountain gum *Eucalyptus pulverulenta* Sims from Co. Kerry where it had began to threaten economically a newly developing ornamental foliage production industry

based in the south west (Murphy *et al.*, 1999; Purvis *et al.*, 2002). The life cycle of the psyllid was studied at three field sites in that county (Purvis *et al*., 2002). In order to reduce the psyllid's deleterious impact, an Australian parasitoid wasp *Psyllaephagus pilosus* (Noyes) (Hymenoptera: Encyrtidae), was introduced as a control agent (Chauzat *et al.*, 2002). The following specimens are in NMI:- **KERRY**: Kilgarvan, ♂♂♀♀ and nymphs, 2000, MPC; **WEXFORD**: John F. Kennedy Park, 2♀♀ and 2 nymphs, 4 November 1974, on shining gum *Eucalyptus nitens* Deane and Maiden, CIC. Native to Australasia, *C. eucalypti* is also known from England, the Isle of Man, Channel Islands, France, Spain including Tenerife Island, Italy and Portugal including Madeira. Outside Europe, it has been reported from New Zealand, Ethiopia, South Africa and Sri Lanka (Franquinho Aguiar and Martin, 1999).

***Ctenarytaina peregrina* Hodkinson, 2007** (Fig. 14)

Ctenarytaina peregrina was described from both Ireland and Britain by Hodkinson (2007). The species was discovered on small-leaved eucalyptus *Eucalyptus parvula* L. A. S. Johnson and K. D. Hill at Salterbridge, Cappoquin, Co. Waterford.

***Ctenarytaina spatulata* Taylor, 1997**

Ctenarytaina spatulata was recorded from Swords, Co. Dublin by Helden (2009). A native of Australia, its food plants are a range of eucalypt species. It has been introduced to a number of counties including New Zealand, Uruguay and the U.S.A. Since 2002, the species has spread to Europe and now also occurs in France, Italy Portugal and Spain (Helden, 2009)

TRIOZIDAE LÖW, 1879

***Bactericera albiventris* (Foerster, 1848)** **New to Ireland**

DUBLIN: Furry Glen (O0935), Phoenix Park, ♀, 25 July 2011, off *Salix* beside the lake, JPOC; **WEXFORD**: Mount Brandon House Hotel (S7126), New Ross, numerous ♂♂♀♀, 17 August 2011, off *Salix*, JPOC.

The following specimens are in NMI:- **DUBLIN**: Donabate, 2♂♂2♀♀, JNH. One of these males is dated September 1894. The food plants are white willow *Salix alba*, crackwillow *S. fragilis*, bay willow *S. pentandra*, almond willow *S. triandra* and purple willow *S. purpurea*. *Bactericera albiventris* is widely distributed in Europe. The species also occurs in Anatolia,

Mongolia, the Caucasus, Russia (Far East and Siberia) and Turkmenistan (Ossianilsson, 1992).

***Bactericera crithmi* (Low, 1877)**

WEXFORD: Grange Strand (S8005) near Fethard, ♂♀, 10 August 2011, off *Crithmum maritimum* growing on the coastal cliffs, JPOC.

Bactericera crithmi was recorded as *Trioza* by Hodkinson and White (1979). The food plant is rock samphire *Crithmum maritimum*. The species has been recorded from Britain, France, Italy, Malta and Spain (Hodkinson and White, 1979; Burckhardt, 2009).

***Bactericera curvatinervis* (Foerster, 1848)**

CAVAN: Deerpark Woods (N5987), Virginia, ♂2♀♀, 19 July 2011, off *Salix* sp., JPOC.

Bactericera curvatinervis was recorded as *Trioza* by Hodkinson and White (1979). The host plants are various species of willow *Salix*. The species is widespread in Europe and also occurs in Japan (Ossianilsson, 1992).

***Trioza alacris* Flor, 1861** (Fig. 15)

CORK: Cork City, 30 August 1994, abundant leaf galls on *Laurus nobilis*, CM; **WATERFORD:** Portlaw Estate (S4415), ♂♀, 1 April 1991, JPOC and MAOC.

Trioza alacris was recorded from various localities in Dublin City, Co. Dublin and Muckross House, Killarney, Co. Kerry by O'Connor *et al.* (1997, 2008). These published records were based on galls and nymphs. Adults were collected in Castleknock and on Raglan Road (all Co. Dublin) on 26 July 2010 and 3 June 2011 respectively. The host plants are bay *Laurus nobilis* and Azores laurel *L. azoricus* (Seub.). The species occurs in the northern Mediterranean area, Austria, Britain, the former Czechoslovakia, France, Germany, Holland, Norway, Poland, Sweden, Switzerland, the Caucasus, Crimea and Georgia. It has also been introduced into North America (Ossianilsson, 1992).

***Trioza galii* Foerster, 1848**

Synonym: *Trioza velutina* Foerster, 1848

WEXFORD: Ballyteige Burrow (S9603) near Kilmore Quay, ♂, 7 July 2011, swept off the sand-dunes where lady's bedstraw *Galium verum* is present, JPOC; Curracloe (T1127), ♀, 21 August 2011, swept off sand-dunes, JPOC.

Trioza galii was reported as *T. galii* and *T. velutina* by Foerster (1848) based on Haliday material. It was also listed by Halbert (1935). Helden *et al.* (2008) recorded the species from Co. Kilkenny. The following specimens are in NMI:- **MAYO**: Mountbrown Lake near Westport, ♀, July 1911, JNH; Westport, ♂, July 1911, JNH; **WICKLOW**: Lugnaquilla, ♂♀, 30 May 1895, JNH. The food plants are bedstraws *Galium* spp. The species is widely distributed in Europe and also occurs in the Caucasus, Japan, Kazakhstan, Siberia and Turkmenistan (Hodkinson and White 1979).

***Trioza munda* Foerster, 1848**

Trioza munda was recorded by Foerster (1848) based on a Haliday specimen. The host plants are field scabious *Knautia arvensis*, *K. silvatica* Duby, devil's-bit scabious *Succisa pratensis* and *Scabiosa lucida* Vill. The species has been reported from Austria, Britain, France, Germany, Italy, Poland, Romania and Switzerland. It also occurs in the Caucasus, Crimea, Amur, Mongolia and Japan (Ossianilsson, 1992).

***Trioza remota* Foerster, 1848** (Fig. 16-17)

Trioza remota was reported from the Phoenix Park, Co. Dublin and Inistioge, Co. Kilkenny by O'Connor (2007, 2010) based on the nymphs and galls. The following specimen is in NMI:- **WESTMEATH**: Mullingar, ♀, JNH. The host plants are oaks *Quercus* spp. *T. remota* is found throughout Europe, Algeria, Georgia and Japan (Malumphy *et al*., 2009).

***Trioza urticae* (Linnaeus, 1758)**

CARLOW: St Mullins (S7238), ♀ 2 July 2011, along River Barrow, JPOC; **CAVAN:** Deerpark Woods, Virginia (N5987), ♂♂ 13 July 2011, JPOC; **DUBLIN:** Castleknock (O0837), nymphs and galls 5 September 1996, on common nettle *Urtica dioica*, JPOC; **KERRY**: Killarney National Park (V9490), ♂ 8 September 1981, swept from vegetation in the Kenmare Estate, JPOC; **KILDARE**: Louisa Bridge (N9936), ♀ 24 February 1992, JPOC and MAOC; **MEATH**: Batterjohn Big (N8953), ♀ 28 October 1991, sand-pit, JPOC; **WATERFORD**: Dunmore East (X6999), ♂, 9 August 2006, swept from vegetation on marine cliffs at Black Knob, JPOC; near Passage East (S6910), 2♂♂, 17 July 1989, JPOC; **WESTMEATH:** Lough Ennell (N4146) at Inchacrone, ♀, 19 April 2006, JPOC; **WEXFORD**: Coolbawn House

(S8237), ♂♀, 8 May 1991, JPOC and MAOC; Craywell (S7228), Craywell (S7228), New Ross, numerous ♂♂♀♀, 28 June 2011, JPOC; Curracloe (T1127), ♂, 18 June 1991, JPOC and MAOC; Stoneyford (T1009) near Broadway, ♂♂♀♀, 18 August 2011, JPOC; **WICKLOW**: Glendalough (T1196), ♀, 11 September 1990, JPOC.

Trioza urticae was reported from Ireland by Foerster (1848) and from Cos Cork, Dublin, Waterford and Wexford by Halbert (1907), Curry (1976a, 1976b) and Helden *et al.* (2008). The following specimens are in NMI:- **DUBLIN**: Howth, ♂♀, 2 May 1909, JNH; Ireland's Eye, ♀, 30 July 1941, AWS; Portmarnock, 2♀♀, JNH; **MAYO**: Westport, ♂♀, June 1909, JNH; **SLIGO**: Lough Gill, ♀, JNH; Strandhill, ♀, JNH; **WESTMEATH**: Athlone, ♂, JNH. The host plants are nettles *Urtica* spp. The species is found throughout the Palaearctic region and India (Malumphy *et al.*, 2009).

***Trioza vitreoradiata* (Maskell, 1879)** (Figs 18-20)

Trioza vitreoradiata was recorded from Salterbridge, Cappoquin, Co. Waterford by O'Connor *et al.* (2004). The food plants are pittosporums *Pittosporum* spp. The species, which originated in New Zealand, also occurs in Britain and France (Cocquempot, 2008). It has recently been expanding its geographical range in Britain and is likely to do so in Ireland (Salisbury *et al.*, 2011).

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FIGURE 1. Adult of *Aphalara ulicis* Foerster, 1848 © Tristan Bantock.

FIGURE 2. Adult of *Arytaina genistae* (Latreille, 1804) © Tristan Bantock.

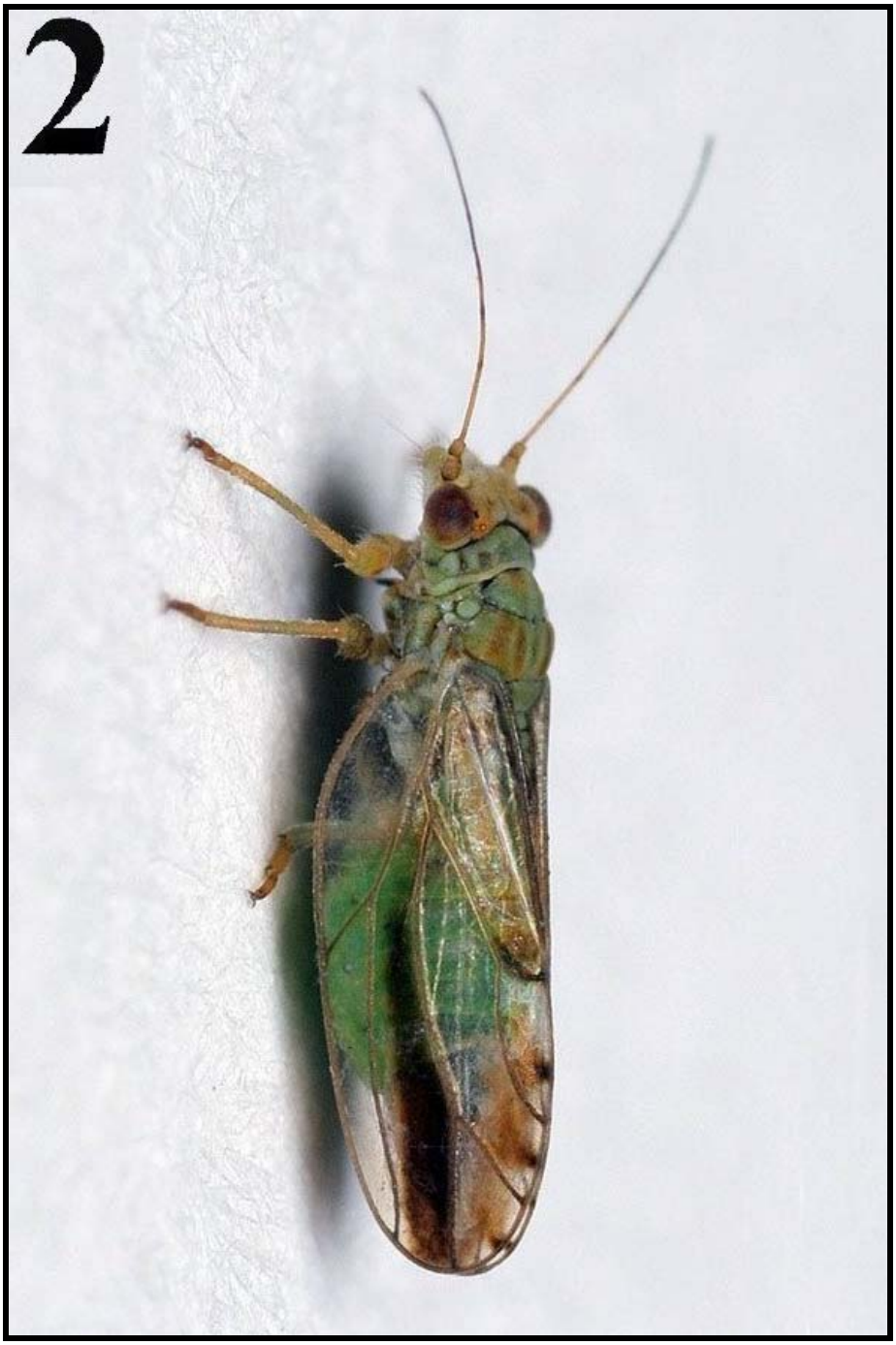

FIGURE 3. Adult of *Cacopsylla* (*Thamnopsylla*) *melanoneura* (Foerster, 1848) © Joe Botting (britishbugs.org.uk).

FIGURE 4. Adult of *Craspedolepta nebulosa* (Zetterstedt, 1828) © Joe Botting (britishbugs.org.uk).

FIGURE 5. Adult of *Livia junci* (Schrank, 1789) © Joe Botting (britishbugs. org. uk).

FIGURE 6. Adult of *Psylla* (*Psylla*) *alni* (Linnaeus, 1758) © Tristan Bantock.

FIGURE 7. Nymphs of *Psylla* (*Psylla*) *alni* (Linnaeus, 1758) © Joe Botting (britishbugs.org.uk).

FIGURE 8. Adult of *Psylla* (*Asphagidella*) *buxi* (Linnaeus, 1758) © Tristan Bantock.

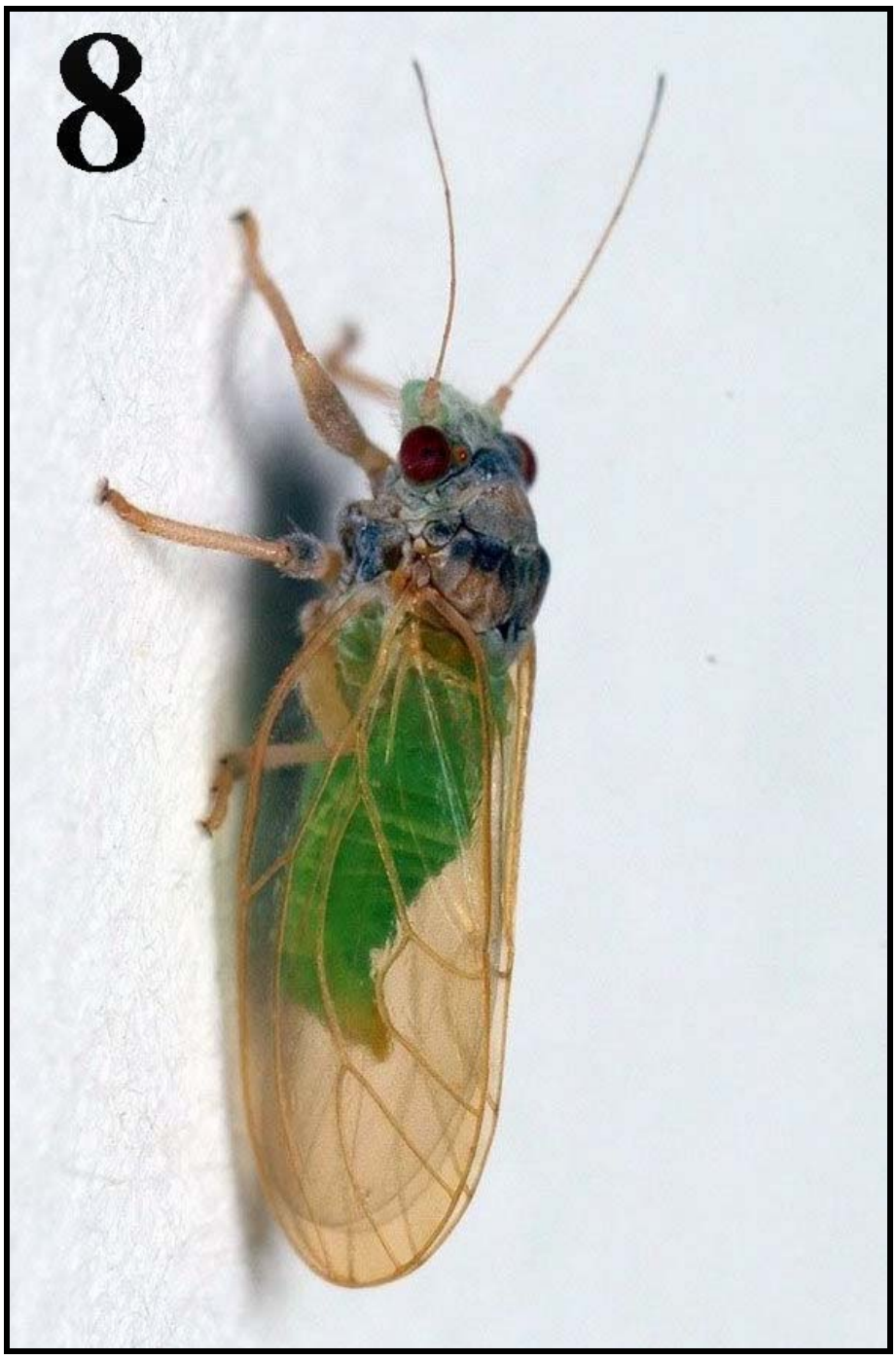

FIGURE 9. Adult of *Psyllopsis discrepans* (Flor, 1861) © Joe Botting (britishbugs.org.uk).

FIGURE 10. Adult of *Spanioneura fonscolombii* Foerster, 1848 © Tristan Bantock.

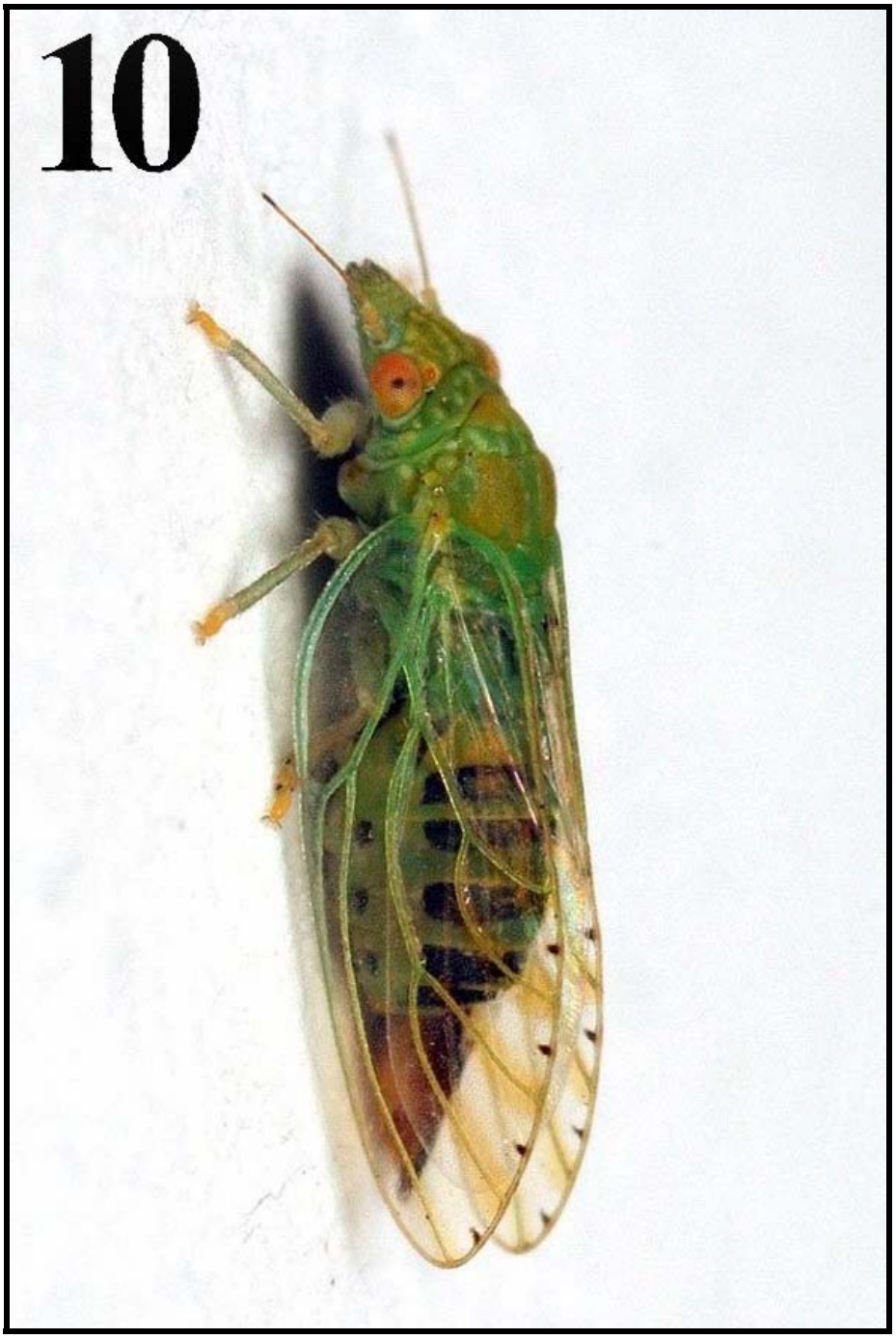

FIGURE 11. Adult of *Strophingia ericae* (Curtis, 1835) © Joe Botting (britishbugs.org.uk).

FIGURE 12. Adult of *Ctenarytaina eucalypti* (Maskell, 1890) © Fera.

FIGURE 13. Nymph and eggs of *Ctenarytaina eucalypti* (Maskell, 1890) © Fera.

FIGURE 14. Nymph of *Ctenarytaina peregrina* Hodkinson, 2007 © Fera.

FIGURE 15. Leaf galls of *Trioza alacris* Flor, 1861on bay laurel © Fera.

FIGURE 16. Adult of *Trioza remota* Foerster, 1848 © Joe Botting (britishbugs. org.uk).

FIGURE 17. Nymphs of *Trioza remota* Foerster, 1848 © Fera.

FIGURE 18. Galling of *Trioza vitreoradiata* (Maskell, 1879) on pittosporum © Fera.

FIGURE 19. Nymph of *Trioza vitreoradiata* (Maskell, 1879) © Fera.

FIGURE 20. Adult of *Trioza vitreoradiata* (Maskell, 1879) © Fera.