Contribution to the Knowledge of Jumping Plant-lice (Hemiptera, Psylloidea) of Lithuania

Article *in* Acta Zoologica Lituanica · January 2009

DOI: 10.2478/v10043-009-0015-6

3 authors, including:

Chris Malumphy
Fera Science Limited, York, United Kingdom
96 PUBLICATIONS **463** CITATIONS
SEE PROFILE

Henrikas Ostrauskas
Valstybinės augalininkystės tarnyba
39 PUBLICATIONS **138** CITATIONS
SEE PROFILE

DOI: 10.2478/v10043-009-0015-6

Acta Zoologica Lituanica, 2009, Volumen 19, Numerus 2

ISSN 1648-6919

CONTRIBUTION TO THE KNOWLEDGE OF JUMPING PLANT-LICE (HEMIPTERA, PSYLLOIDEA) OF LITHUANIA

Chris MALUMPHY[1], Henrikas OSTRAUSKAS[2, 3], Daniel PYE[1]

[1]Central Science Laboratory, Sand Hutton, YO41 1LZ United Kingdom. E-mail: c.malumphy@csl.gov.uk
[2]Phytosanitary Research Laboratory, Sukilėlių str. 9a, LT-11351 Vilnius, Lithuania. E-mail: vaathe@vaat.lt;
[3]Institute of Ecology, Vilnius University, Akademijos 2, LT-08412 Vilnius-21, Lithuania. E-mail: entlab@centras.lt

Abstract. Results of the investigation into jumping plant-lice (Hemiptera, Psylloidea) of Lithuania based on samples collected during 2007 and 2008 are presented. In this study, six species of Psyllidae and four species of Triozidae were detected; nine of the species were recorded from Lithuania for the first time.
Key words: Psylloidea, jumping plant-lice, Lithuania, first records

Introduction

Jumping plant-lice (Hemiptera, Psylloidea) feed on the phloem sap of plants, mostly dicotyledons. The group contains many economically important pest species. Three species have been reported to be horticultural or agricultural pests in Lithuania (Vengeliauskaitė 1974): *Cacopsylla mali* (Schmidberger) and *C. pyri* (Linnaeus) are common and widespread pests in apple and pear orchards respectively; and *Trioza apicalis* Foerster is an occasional pest of carrots grown in gardens located near coniferous forests. These are apparently the only species of jumping plant-lice recorded for Lithuania so far. Ossiannilsson (1992) studied jumping plant-lice of Fennoscandia and Denmark, and also mentioned species found in the Baltic countries (Estonia and Latvia), but none of the species were specifically recorded for Lithuania. Neither the list of Psylloidea of the European part of the former USSR (Gegechkori & Loginova 1990) nor the online database of the European fauna (Burckhardt 2007) contains specific records for Lithuania. The present study provides recent records of jumping plant-lice for Lithuania.

Material and methods

Samples of jumping plant-lice were collected by the first two authors on woody and herbaceous plants mainly during 17–23 June 2007 and 21–30 July 2008; and from water traps (Flora Insect Traps, Nickerson Brothers Ltd., UK, 1 litre) placed in potato (*Solanum tuberosum* L.) fields in Klaipėda county during 2007 and 2008. Adults and larvae were slide-mounted according to methods published in works by Malumphy (2005) and identified using the diagnostic keys provided by Hodkinson and White (1979), Ossiannilsson (1992) also White and Hodkinson (1982). Slide-mounted specimens were deposited at the following institutes: Central Science Laboratory (CSL) (Sand Hutton, UK) and the Phytosanitary Research Laboratory (Vilnius, Lithuania). The nomenclature for jumping plant-lice follows Ossiannilsson (1992). The host and distribution data presented below were also obtained from Ossiannilsson (1992).

Results

Ten species belonging to two families were recorded during the present study.

Psyllidae

Arytainilla spartiophila (Foerster 1848)
Host plant: *Sarothamnus scoparius* L.
Distribution: southern and central Europe, Denmark, Britain and Ireland; and introduced into the Nearctic region (Hodkinson 1988).
Collection data: Utena County, Ignalina, 28 July 2008, a single adult female on *S. scoparius*.

Cacopsylla mali (Schmidberger 1836)
Psylla mali (Schmidberger): Vengeliauskaitė 1974; Raudonis and Valiuškaitė 2001.
Host plants: *Malus* spp.
Distribution: throughout the Palaearctic region and introduced into the Nearctic region and Australia. It was common and widespread in Lithuania in gardens, com-

mercial orchards, and was especially abundant in Šilutė, Pasvalys, Šiauliai, Vilnius, Kaunas districts, where in favourable years the insect occurred at high densities and damaged up to 59% of blossoms (Vengeliauskaitė 1974). Later Raudonis and Valiuškaitė (2001) reported its occurrence in more than half of apple orchards at low, non-damaging levels.
Collection data: all samples consisted of abundant adults and empty larval skins on *M. domestica* Borkhausen, unless stated otherwise. Klaipėda County: Palanga, 21 July 2008; Gargždai, 23 July 2008; Klaipėda, central park, 24 July 2008. Šiauliai County: Šiauliai, bus station, 20 July 2008. Utena County: Ignalina, 28 July 2008, one adult female on *Cornus* sp. (near *M. domestica*); Stripeikiai, 27 July 2008.

Cacopsylla melanoneura (Foerster 1848)
Host plants: *Crataegus* spp., *Malus* spp. and *Pyrus* spp.
Distribution: throughout the Palaearctic region.
Collection data: Vilnius County: Vilnius, city centre, 23 June 2007, numerous larvae on *Malus* sp.

Cacopsylla peregrina (Foerster 1848)
Host plants: *Crataegus* spp.
Distribution: throughout the Palaearctic region.
Collection data: all samples were recorded on *C. monogyna* Jacquin unless otherwise stated. Klaipėda County: Klaipėda, widespread in the city centre and parks, 21–24 July 2008, abundant adults; Kretinga, museum gardens, 23 July 2008, sparse; Nida, 22 July 2008, abundant; Šilutė, central park, 25 July 2008, huge population on *Crataegus* sp.; Smiltynė, Kopgalis, 24 July 2008, sparse. Vilnius County: Vilnius, city centre, 18 June 2007, numerous adults.

Psyllopsis discrepans (Flor 1861)
Host plants: *Fraxinus* spp.
Distribution: central and eastern Europe, Scandinavia, Britain, Armenia, Georgia and Tadzhikistan. Introduced into the Nearctic region (Hodkinson 1988).
Collection data: Klaipėda County: Nida, 22 July 2008, a single adult female on *F. excelsior* L.

Psyllopsis fraxinicola (Foerster 1848)
Host plants: *Fraxinus* spp.
Distribution: Europe, North Africa, Turkey, Armenia, Kazakhstan and Georgia. Introduced into the Nearctic region (Hodkinson 1988).
Collection data: all samples were collected on *F. excelsior*. Klaipėda County: Klaipėda University Botanical Garden, 21 July 2008, abundant adults; Palanga, Skulptūrų Park, 21 July 2008, abundant adults and larvae; Kretinga, Museum Gardens, 23 July 2008, low numbers of adults; Gargždai, central square, 23 July 2008, a single adult male; Ventės Ragas, 25 July 2008, abundant adults.

Triozidae
Bactericera nigricornis (Foerster 1848)
Host plants: polyphagous, feeding on plants belonging to Apiaceae, Asteraceae, Brassicaceae, Chenopodiaceae, Liliaceae, Poaceae, Polygonaceae and Solanaceae. It feeds on several vegetable crops (including potato) and is also a pest of carrot (*Daucus carota* L.), Chinese cabbage (*Brassica chinensis* L.) and onion (*Allium cepa* L.) (Hodkinson 1981; Boertnes 1997; Hudák & Pénzes 2005).
Distribution: occurs widely in Europe, Morocco, Kazakhstan, Russia and China.
Collection data: Klaipėda County: Dreverna, July 2007, several adults caught in water-traps in *Solanum tuberosum* fields.

Trioza flavipennis (Foerster 1848)
Host plant: *Aegopodium podagraria* L.
Distribution: occurs widely in Europe. It was recorded from Estonia and Latvia (Ossiannilsson 1992).
Collection data: Vilnius County: Vilnius, Antakalnis Cemetery, 26 July 2008, low numbers of larvae on *A. podagraria*.

Trioza remota (Foerster 1848)
Host plants: *Quercus* spp.
Distribution: found throughout Europe, Algeria, Georgia and Japan.
Collection data: Vilnius County: Vilnius, Naujoji Vilnia, Field and Flowering Experimental Station, 19 June 2007, larvae causing pit galls on the undersides of *Quercus robur* L. foliage.

Trioza urticae (Linnaeus 1758)
Host plants: *Urtica* spp.
Distribution: throughout the Palaearctic region and India.
Collection data: Klaipėda County: Dreverna, July 2008, numerous adults caught in water-traps in *Solanum tuberosum* fields.

Discussion

Ten species of jumping plant-lice were collected by the authors in Lithuania during 2007 and 2008, nine of which were recorded from the country for the first time. This brings the total number of Psylloidea re-

corded for Lithuania to 12, which is collated with 84 species recorded for Fennoscandia and Denmark by Ossiannilsson (1992) and 104 for neighbouring Poland (Burckhardt 2007). There is no doubt that the fauna of Lithuania is studied inadequately and perhaps 70 or more species are still awaiting detection. National checklists provide essential baseline data, from which faunistic changes, due to such factors as international trade and climate change, can be monitored and accurately assessed. This is particularly relevant to jumping plant-lice as several species are successful invasive colonisers. For example, approximately a fifth of the species present in Britain are of exotic origin and at least nine species have been introduced into Europe and have become naturalised since the 1970s. Two of these exotic species may be of concern to Lithuania: *Cacopsylla fulguralis* (Kuwayama) on *Elaeagnus* and *Trioza vitreoradiata* (Maskell) on *Pittosporum*. *C. fulguralis* originates in Asia and was introduced into Britain and France in about 1999 (Malumphy & Halstead 2003). It is spreading rapidly throughout England and has also been reported from Belgium (Baugnee 2003) and Italy (Süss & Savoldelli 2003). *T. vitreoradiata* originates in New Zealand and was introduced into Britain in the 1990s (Martin & Malumphy 1995). It is naturalised in western parts of England and Scotland and has been reported from France (Cocquempot 2008) and Ireland (O'Connor *et al*. 2004).

Acknowledgements

We would like to express our sincere gratitude to the managers of the State Plant Protection Service of Lithuania for their support, to specialists of Klaipėda Regional Plant Protection and Quarantine Posts for their hospitality; Dr Povilas Ivinskis and Dr J. Rimšaitė (Institute of Ecology, Vilnius University) for the hospitality at Obelų Ragas station; K. Baltaragienė and R. Goliakovienė for assistance in Klaipėda University Botanical Garden; to the Farm of Petras Vasiliauskas for the use of data from their water-trap samples; and to Lisa Palmer of the CSL for assistance with the water-traps.

References

Baugnee, J. Y. 2003. Sur la presence en Belgique du Cicadellidae *Kyboasca maligna* (Walsh, 1862) et du Psyllidae *Cacopsylla fulguralis* (Kuwayama,1907) (Hemiptera Homoptera). *Bulletin de la Societe Royale Belge d'Entomologie* 139: 72–73.

Boertnes, G. 1997. Occurrence of the sucker *Bactericera nigricornis*: Damage situation to carrot and Chinese cabbage. *Gartneryrket* 86: 22–23. [Boertnes, G. 1997. Forekomst av sugararten *Bactericera nigricornis*: Skadebilete i gulrot og kinakaal. *Gartneryrket* 86: 22–23.]

Burckhardt, D. 2007. *Hemiptera*, *Psylloidea*. *Fauna Europaea*. Version 1.3, http://www.faunaeur.org 3 December 2008.

Cocquempot, C. 2008. A new psyllid of Mock Orange in France. *PHM Revue Horticole* 498: 33–36.

Gegechkori, A. M. and Loginova, M. M. 1990. *Psyllids* (*Homoptera*, *Psylloidea*) *of the USSR* (*annotated checklist*). Mecniereba, Tbilisi. [Гегецхори, А. М., Логинова, М. М. 1990. *Псилиды* (*Homoptera*, *Psylloidea*) *СССР* (*аннотированный список*). Мецнереба, Тбилиси.]

Hodkinson, I. D. 1981. Status and taxonomy of the *Trioza* (*Bactericera*) *nigricornis* Förster complex (Hemiptera: Triozidae). *Bulletin of Entomological Research* 71: 671–679.

Hodkinson, I. D. 1988. The Nearctic Psylloidea (Insecta: Homoptera): an annotated check list. *Journal of Natural History* 22: 1179–1243.

Hodkinson, I. D. and White, I. M. 1979. Homoptera: Psylloidea. *Handbook for the Identification of British Insects* 2: 1–98.

Hudák, K. and Pénzes, B. 2005. The new pest of bulbs is *Trioza* (*Bactericera*) *nigricornis* Förster. In: J. Horvath, A. Haltrich and J. Molnar (eds) *51st Plant Protection Days 2005*. *Abstracts of lectures and posters*, pp. 3. Budapest: Magyar Agrartudomanyi Egyesulet. [Hudák, K., Pénzes, B. 2005. A hagymafélék legújabb kártevője a *Trioza* (*Bactericera*) *nigricornis* Förster. *51 Növenyvedelmi Tudományos Napok 2005*, *Eloadások összefoglalói*, pp. 3. Budapest.]

Malumphy, C. 2005. *Trioza erytreae*. *European and Mediterranean Plant Protection Organization Bulletin* 35: 357–360.

Malumphy, C. P. and Halstead, A. J. 2003. *Cacopsylla fulguralis* (Kuwayama), an Asian jumping plant louse (Hemiptera: Psyllidae), causing damage to *Elaeagnus* in Britain. *British Journal of Entomology and Natural History* 16: 89–93.

Martin, J. H. and Malumphy, C. P. 1995. *Trioza vitreoradiata* (Maskell), a New Zealand jumping plant louse (Homoptera, Psylloidea) causing damage to *Pittosporum* in Britain. *Bulletin of Entomological Research* 85: 253–258.

O'Connor, J. P, Dunne, R. and Whelton, A. 2004. *Trioza vitreoradiata* (Maskell) (Homoptera: Psylloidea), a New Zealand species new to Ireland. *Irish Naturalists' Journal* 27: 349–350.

Ossiannilsson, F. 1992. The *Psylloidea* (Homoptera) of

Fennoscandia and *Denmark. Fauna Entomologica Scandinavica* 29: 1–346.

Raudonis, L. and Valiuškaitė, A. 2001. Urgent problems of phytosanitary state of fruit crops in Lithuania. *Proceedings of 9th international conference of horticulture, September 3rd– 6th 2001 Llednice, Czech Republic* 1: 177–181.

Süss, L. and Savoldelli, S. 2003. Rinvenimento di *Cacopsylla fulguralis* (Kuwayama) (Homoptera Psyllidae) in Italia. *Bollettino di Zoologia Agraria e di Bachicoltura, Serie II* 35: 95–98.

Vengeliauskaitė, A. 1974. Plant jumping-lice. In: S. Pileckis and L. Žuklys (eds) *Handbook for the plant protection worker*, pp. 86–88. Vilnius: Mintis.

White, I. M. and Hodkinson, I. D. 1982. Psylloidea (Nymphal Stages). *Handbooks for the Identification of British Insects* 2: 1–50.

Žinių apie Lietuvos blakutes (Hemiptera, Psylloidea) papildymas

Chr. Malumphy, H. Ostrauskas, D. Pye

Santrauka

Blakutės (Hemiptera, Psylloidea) tirtos Lietuvoje 2007 ir 2008 metais. Nustatytos 6 Psyllidae ir 4 Triozidae šeimų rūšys. Iš jų 9 rūšys Lietuvos faunai registruotos pirmą kartą. Sujungus skelbtus kitų autorių duomenis ir šių tyrimų rezultatus, Lietuvoje registruota 12 blakučių rūšių.

Received: 18 February 2009
Accepted: 12 May 2009