

First records of the Mediterranean fig psyllid *Homotoma ficus* (Linnaeus, 1758) (Hemiptera, Psylloidea, Homotomidae) in Belgium

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Abstract

The fig psyllid *Homotoma ficus* (Linnaeus, 1758) (Psylloidea, Homotomidae) is reported for the first time from Belgium, where it has recently been observed at two localities. It is a Mediterranean species monophagously living on fig (*Ficus carica* L.). Fig plants are not of economic importance in Belgium and *H. ficus* seems to cause only limited damage to the host plants. Information is given on the biology of *H. ficus*.

Keywords: alien species, Belgian fauna, climate change, ornamental plants, pest

Samenvatting

De vijgenbladvlo *Homotoma ficus* (Linnaeus, 1758) (Psylloidea, Homotomidae) wordt voor het eerst gemeld uit België, waar de soort recent op twee plaatsen werd waargenomen. Het is een Mediterrane soort die alleen op vijgen (*Ficus carica* L.) voorkomt. Vijgen zijn economisch niet van belang in België en *H. ficus* schijnt veelal maar beperkte schade te veroorzaken aan de vijgen. De biologie van *H. ficus* wordt besproken.

Résumé

Homotoma ficus (Linnaeus, 1758) (Psylloidea, Homotomidae) est signalé pour la première fois en Belgique, où l'espèce a été observée récemment à deux endroits. C'est une espèce méditerranéenne liée aux figuiers (*Ficus carica* L.). Les figues n'ont pas d'importance économique en Belgique, de plus, *H. ficus* ne semble leur causer que des dommages très limités. La biologie de *H. ficus* est discutée.

Introduction

Psyllids or jumping plant lice (Hemiptera: Sternorrhyncha: Psylloidea) are a small group of nearly 4.000 species worldwide. The Fauna Europaea lists almost 400 species in Europe (BURCKHARDT, 2013). They are small (1–12 mm) sucking phytophagous insects feeding on phloem sap of vascular plants. Most species are narrowly host-specific, being restricted to one or a few closely related host plants, particularly in their immature stages (HODKINSON, 1974; BURCKHARDT *et al.*, 2014). Psyllids deposit their eggs single or in clusters on the host plant. Depending on the species, eggs are laid on the new buds, in crevices of the bark or on leaves. Larvae of many species often prefer characteristic feeding sites and are usually concentrated on parts with active growth: new leaves, flowers and sometimes even roots (LAUTERER & BAUDYS, 1968).

Psyllids are currently classified into eight extant families (BURCKHARDT & OUVARD, 2012). The family Homotomidae is rather small with 12 genera and 85 species worldwide (OUVRARD,

2020), all of them associated with the Mulberry plant family (Moraceae) and mainly the genus *Ficus* (HOLLIS & BROOMFIELD, 1989; HOLLIS, 2004). Two species are represented in the warm regions of the western Palaearctic. *Homotoma ficus* (Linnaeus, 1758) (Fig. 1), belonging to the Homotominae, feeds on fig (*Ficus carica* L.) (BURCKHARDT, 2013; OUVRARD, 2020). The second species is the tropical Asiatic *Macrohomotoma gladiata* Kuwayama, 1908, belonging to the Macrohomotominae, which lives on ornamental *Ficus* in urban environments. This species was accidentally introduced in Europe in Italy, Spain and Montenegro (PEDATA *et al.*, 2012; OUVRARD, 2020).

Currently, 67 psyllid species are known from Belgium (BAUGNÉE *et al.*, 2002; BAUGNÉE, 2003, 2013).



Fig. 1. *Homotoma ficus* ♀, Mechelen, 25.VI.2018. © Jan Soors.

Material and methods

The psyllid was identified by looking for psyllid images on the internet (OUVRARD, 2020) after which the identification was confirmed by the second and third author.

Results

Family: Psyllidae Latreille, 1807

Subfamily: Homotominae Heslop-Harrison, 1958

***Homotoma ficus* (Linnaeus, 1758)**

The first author collected on 25.VI.2018 two adults of *H. ficus* with a skinner moth light trap containing a 125 W mercury vapor lamp in a small urban garden in Mechelen (GPS 51.0319, 4.4875). In this garden no *Ficus* is growing, but in a neighboring garden a tall *Ficus carica* L. is present. This observation inspired to check data on the site waarnemingen.be and one older unidentified find was listed: Evere-Moeraske (Brussels) (GPS 50.879, 4.391), 23.VI.2018, 1 ♀ on *Lapsana communis* L. (Asteraceae) in a small urban garden, B. Hanssens.

Discussion

Homotoma ficus is a very characteristic species easily recognizable by its size (4.2–4.8 mm), the dark brown markings of the front wings (Fig. 1) and the markedly flattened antennae bearing long dark setae (HODKINSON & WHITE, 1979). It is a Mediterranean species that originally occurred in the Mediterranean and the Middle East. Its origin is possibly west Asia (BURCKHARDT & MÚHLETHALER, 2003). In Europe, *H. ficus* is reported from Austria, Balearic Islands, Bulgaria, Croatia, Cyprus, France, Great Britain, Italy, Malta, Romania, Serbia, Slovenia, Spain, Switzerland and Ukraine (JERINIC-PRODANOVIC, 2011; BURCKHARDT, 2013; SELJAK, 2020). Outside Europe, reports are from North Africa and the Middle East till Iran (BURCKHARDT, 1989) and Azerbaijan (ZEIDAN-GÈZE & BURCKHARDT, 1998). This species was also introduced to the United States of America (OUVRARD, 2020).

Homotoma ficus is a warmth loving species as is illustrated by its distribution in Slovenia where the species is restricted to the warm costal region (JERINIC-PRODANOVIC, 2011; SELJAK, 2020). In Great Britain, it is restricted to the warmer parts: the Channel Islands and the urban area of London (HODKINSON & WHITE, 1979; NATIONAL BIODIVERSITY NETWORK, 2020). According to the field experience of the second author, *H. ficus* in France is restricted to the southern part of the country.

In southern regions, *H. ficus* is a univoltine species, overwintering as eggs next to buds. Nymphs start to occur from the moment of bud-break and the first instars start to feed on the buds. Later instars move to the leaves. Larvae are present from March-April till the end of July (GENCER *et al.*, 2006; SELJAK, 2020). Photos of nymphs and eggs are given by SELJAK (2020). Whether this phenology also applies to northern countries like Belgium is unknown. Research in Serbia showed that the bug *Malacocoris chlorizans* (Panzer, 1794) (Heteroptera: Miridae) feeds on the nymphs of *H. ficus*, while another bug *Orius minutus* (Linnaeus, 1758) (Heteroptera: Anthocoridae) attacks their eggs (JERINIC-PRODANOVIC, 2011).

Most studies report no significant damage of the fig psyllid (BURCKHARDT, 1994). However, according to investigations on larger fig parcels, *H. ficus* appears periodically in larger numbers. Larval and adult feeding can lead to some damage on fig leaves or even on fruits. Damage can also result from the development of sooty mould growing on the excess honeydew secretion. This sooty mould inhibits respiration and photosynthesis of infested plants and reduces the market value of infested fig fruits (GENCER *et al.*, 2006; JERINIC-PRODANOVIC, 2011). In Belgium, figs are only grown in private gardens and have no commercial value. Damage by the fig psyllid seems improbable, because only in high numbers, some damage may be caused and *H. ficus* probably never reaches these high numbers in Belgium.

The first Belgian records of wild-growing figs are exclusively from thermophilous, rocky substrates in Wallonia: quays along the river Vesdre near Verviers, along the river Meuse near Visé and from a quarry in Comblain-au-Pont (VERLOOVE, 2020). From the 1950's onwards, it was also regularly found on dumps (from kitchen waste) (VERLOOVE, 2020). Spontaneously growing figs are now mainly confined to urban habitats such as quays and basement walls: initially they were restricted to the larger cities like Antwerp, Brussels, Ghent and Leuven (VERLOOVE, 2020), but nowadays they are also found in smaller cities and villages, with the most observations along the very urbanized axis Brussels-Antwerp (source: www.waarnemingen.be). It is probably not a coincidence that both observations of this species were from this area. Another remarkable fact is that both observations were close to important railway roads. Figs benefit from global climate change and the warmer temperatures in urban environment (FLORON, 2015) and along railways. Recently, figs became also popular in garden centres and more and more people actively plant figs in their gardens.

Ficus carica apparently easily germinates from thrown away pits from commercial, seed-bearing figs introduced from the south (VERLOOVE, 2020). Each *Ficus* species needs a specific pollinating wasp in order to reproduce and spread (RAMIREZ, 1970). The pollinator wasp for *F. carica*, *Blastophaga psenes* (Linnaeus, 1758), is absent from Belgium. As a result, *F. carica* is not reproducing sexually here and only parthenocarpic varieties ripen figs without pollination. Although the species is unable to reproduce sexually, it persists very well: plants in a quarry in Géromont are known to be present since about a century and some of the oldest individuals in the city of Ghent probably persist since the 1980's and by now have reached gigantic dimensions (VERLOOVE, 2020). However, it is unlikely that *Ficus carica* will naturalize here, unless its pollinator would be introduced or spontaneously reaches Belgium.

Most intriguing is how the fig psyllid reached Belgium. In Mechelen, the species was collected with a light trap, indicating that this species is capable of dispersal. However, because the nearest known populations are far away (southern France), migration seems not the most obvious possibility. Introduction together with the host plant seems more likely. Observations in garden centres of figs could reveal whether fig plants bearing psyllids are sold.

On the other hand, the locations of both records in Belgium make it not unthinkable that – a human facilitated – natural dispersal is the cause of this expansion of distribution. Other insects such as the noctuid moth *Caradrina gilva* (Donzel, 1837) and tineid moth *Eudarcia kasyi* (Petersen, 1971) (MUUS *et al.*, 2019) are in Belgium almost exclusively found near large railway roads, mostly on the same urban axis Brussels-Antwerp. It is unclear if *Homotomus ficus* is mobile enough to have reached Belgium by natural dispersal. Probably, the higher temperatures in Belgium since the 1980s and the warm urban and railway microclimates made the settlement of *H. ficus* possible.

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