Ephestia welseriella and *Delplanqueia inscriptella* (Lepidoptera: Pyralidae, Phycitinae), new to the Belgian fauna

Dan Slootmaekers, Chris Snyers & Steve Wullaert

Abstract. In 2015 and 2016 several specimens of *Ephestia welseriella* (Zeller, 1848) were trapped in Rochefort and three specimens of *Delplanqueia inscriptella* (Duponchel, 1837) were found at Han-sur-Lesse (both Namur, Belgium). These are the first records of these species in Belgium. Information on the geographical distribution and biology of both species is provided as well as an examination of the genitalia of *D. inscriptella*.

Samenvatting. In 2015 en 2016 werden enkele exemplaren van *Ephestia welseriella* (Zeller, 1848) gevangen te Rochefort (Namen, België) en drie exemplaren van *Delplanqueia inscriptella* (Duponchel, 1837) werden gevonden te Han-sur-Lesse (beide Namen, België). Het is de eerste keer dat deze soorten in België werden waargenomen. Informatie over de geografische verspreiding en de biologie van beide soorten wordt gegeven samen met een beschrijving van de genitalia van *D. inscriptella*.

Résumé. En 2015 et 2016 quelques exemplaires d'*Ephestia welseriella* (Zeller, 1848) ont été capturés à Rochefort et trois exemplaires de *Delplanqueia inscriptella* (Duponchel, 1837) ont été trouvés à Han-sur-Lesse (les deux Namur, Belgique). Il s'agît des premières mentions de ces espèces en Belgique. Des informations concernant la distribution géographique et la biologie des deux espèces sont fournies ainsi qu'une investigation des genitalia de *D. inscriptella*.

Key words: *Ephestia welseriella* – *Delplanqueia inscriptella* – Faunistics – Lepidoptera– New record – Belgium.

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Introduction

During 2015–2016 the moth diversity in the Famenne and Calestienne area was surveyed by the Workgroup Lepidoptera Faunistics. The survey focused mainly on areas of great natural interest – based on botanical surveys – and resulted in the finding of multiple new species for Belgium, two of which, *Ephestia welseriella* (Zeller, 1848) and *Delplanqueia inscriptella* (Duponchel, 1836), both of the Pyralidae family, are recorded here for the first time for the Belgian fauna, based on De Prins (2016) and De Prins & Steeman (2003–2018).

Ephestia welseriella (Zeller, 1848)

The first record of *E. welseriella* (1 specimen on light) was made by the authors on June 27th 2015 in Belvédère, Rocher Serin and Fond St-Martin at Rochefort (Namur). Over 2015 and 2016 we found multiple specimens on dry, calcareous grasslands throughout the province of Namur (1 on July 11th 2015, 6 in 2 separate localities on July 11th 2016 and 3 in 2 different sites on July 16th 2016).

Taxonomy

The genus *Ephestia* has 10 representatives in Europe (Karsholt & van Nieukerken 2013). In Belgium only three species were known: *Ephestia elutella* (Hübner, 1796), *Ephestia kuehniella* Zeller, 1879 and *Ephestia parasitella* Staudinger, 1859 (De Prins 2016, De Prins & Steeman 2003–2018). Only the latter is a naturally occurring species in Belgium, both other ones are pest species in stored products and occur all over the globe. *E. welseriella* is thus the fourth addition to the genus *Ephestia* in Belgium.

Distribution

E. welseriella mainly occurs in de Mediterranean area. The observation we mention here as well as observations from southern Germany and Ukraine indicate that the species most likely reaches the northern-most boundary of its distribution in Belgium. This is underlined by the fact that we found a good number of specimens in Belgium but all in the south and on warm and dry calcareous grasslands, known to have their own micro-climate, resembling climates of southern Europe. The species has been recorded from Albania, Austria, Bosnia & Herzegovina, Bulgaria, Croatia, France (incl. Corsica), S Germany, Greece (incl. Crete), Hungary, Italy (incl. Sardinia, Sicily), Malta, Portugal, Romania, S European Russia (incl. Caucasus), Spain, Switzerland, and Ukraine (Speidel *et al.* 2013). Outside Europe *E. welseriella* occurs in Algeria, Libya, Morocco and Tunisia (Leraut 2014).

Figure 1. *Ephestia welseriella* (Zeller, 1848) leg. Workgroup Lepidoptera Faunistics, det. Dan Slootmaekers. © Dan Slootmaekers.

Characteristics

Identification of species in the *Ephestia* genus can be difficult since they generally have no striking external features. *E. welseriella* however, can be identified with certainty through external features, hence making collecting and genital preparation unnecessary.

The wing pattern is rather bold: on a greyish ground colour the white or at least very light grey scales become dominant towards the costa of the forewing. This results in a two-toned forewing which is grey to dark grey on the discal side and whitish on the costal side.

Over the forewing there are three prominent black bands. The proximal band is a single band while the terminal band is actually made up of two separate bands. All bands are clearly defined in the whitish, costal zone of the wing but become vague or less apparent in the darker, discal zone. Also note the double fascia that are positioned at 2/3 between the proximal and terminal band.

Biology

Unlike most of the other species in the genus *Ephestia*, this species occurs naturally in Belgium and is not linked to food storage or other human activities. The larvae live in the bulbs of *Allium* sp., mainly *A. flavum* and *A. roseum* (Slamka 2010, Leraut 2014) which thrive in all the localities where we have found specimens of this species. Since the species was found only on slopes with a warm microclimate whereas *Allium* species occur throughout Belgium and much more north, it might be possible that they rely only on certain species such as *Allium sphaerocephalon*, which are typical for the dry calcareous slopes in the Calestienne. Or perhaps they can only complete their life cycle in certain climatic conditions that are absent elsewhere. Literature did not provide any insights on this topic.

Delplanqueia inscriptella (Duponchel, 1837)

On June 25th of 2016 at least three specimens of an unidentified pyralid moth were photographed during a survey in the domain of Grottes-de-Han at Han-sur-Lesse (Namur). This area is part of the old valley of the river Lesse. The species was found on a xerothermic calcareous grassland. The three specimens were attracted to light and at first incorrectly identified as *D. dilutella* (Denis & Schiffermüller, 1775). One specimen was collected and proven to be *D. inscriptella* by means of examination of the genitalia by Steve Wullaert. This determination followed a lecture on this species complex, given by Wolfgang Wittland during the annual meeting of the Dutch Entomological Society. Another specimen was caught also at Han-sur-Lesse (NA) on 23.vi.2017, leg. C. Steeman *et al*., gen. det. C. Steeman.

Taxonomy

Delplanqueia is a small genus represented by only 3 species in Europe (Karsholt & van Nieukerken 2013). Both Belgian species that may occur syntopically are very similar and have only recently been recognised as a separate species by Leraut (2014) based on genital characters. The third European species, *D. cortella* (Constant, 1884) is only known from Corsica, Sardinia and the Italian mainland (Karsholt & van Nieukerken 2013).

Distribution

D. dilutella was thus far the only species known from Belgium and most of Western Europe. *D. inscriptella* has hitherto been observed in ten European countries: Austria, Bulgaria, Denmark, France, Germany, Ireland, Italy, Spain, Switzerland, the United Kingdom, (Leraut 2014, Agassiz 2015, Buhl *et al*. 2016, Haslberger *et al*. 2016, Schmid 2016, Witland & Seliger 2016). Outside Europe, it occurs in Algeria (Leraut 2014). Belgium may now be added to this list.

In Europe *D. inscriptella* is considered to be more of a southern species than its counterpart *D. dilutella*. For the time being this appears to be an educated guess since the recent split and similar external features of both species render the existing knowledge of either species uncertain. In Belgium *Delplanqueia* species are typically found on dry, calcareous grasslands in the southern half of the country where their foodplants, *Thymus* sp. and possibly *Polygala* sp., are abundant.

Figure 2. *Delplanqueia inscriptella* (Duponchel 1936) leg. Workgroup Lepidoptera Faunistics, det. Steve Wullaert. © Chris Snyers.

Characteristics

As most Phycitinae, the species has a slender appearance, small with a wingspan of ca. 20 mm. This is near cryptic with its sister species *D. dilutella*. Some authors, such as Wittland & Seliger (2016) mention subtle differences in the external morphology such as less contrast and a reddish brown ground-colour in *D. inscriptella* instead of greyish in *D. dilutella*, but in general genital examination remains necessary to validate many, if not all, specimens of this species complex.

The collected specimen is a male of which the genital structures could be identified using Wittland & Seliger

(2016). Features that allow safe identification of *D. inscriptella* are the morphology of the cornutus and its relative size compared to the aedeagus. The broadly based cornutus quickly narrows into a thin tip, resulting in a bulb-shaped cornutus (Figure 2). Aedeagus and cornutus have the same length. In *D. dilutella* the cornutus is significantly shorter than the aedeagus and narrows evenly along its entire length. We were lucky to have found a male since female genitalia of these two species have a nearly identical morphology.

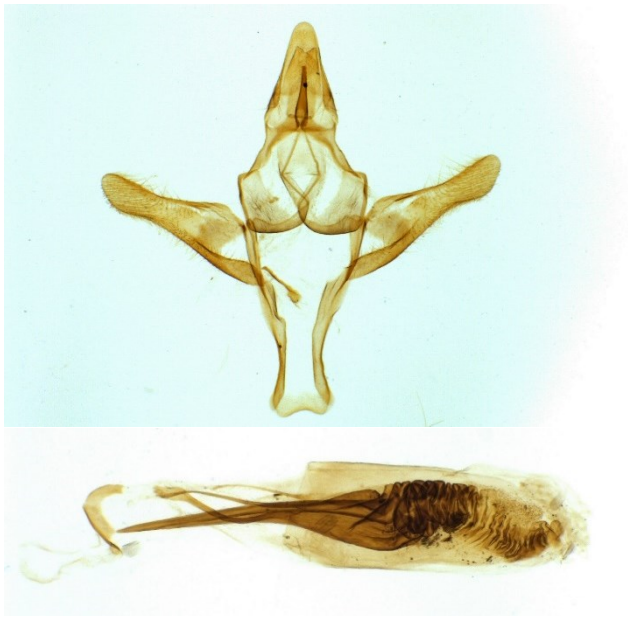

Figure 2 Male genitalia structures of *Delplanqueia inscriptella* ♂, Han-sur-Lesse (NA), 25.vi.2016, leg. Workgroup Lepidoptera Faunistics, det. & gen. prep. Steve Wullaert. © Jean-Pierre Beuckx.

Biology

Not much is known about the biology of either *Delplanqueia* species. The larvae feed on *Thymus serpyllum* (thyme), and other *Thymus* species (Hannemann 1964) and appear to possibly share the same habitat. Records of *Polygala* sp. and *Globularia* sp. (Hannemann 1964) are probably erroneous. The caterpillar constructs a long silken tube close to the ground at the base of *Thymus* plants and eats at night on the leaves, it hibernates in the tube till May–June (Hannemann 1964). It was further noted that the tubes contain material from *Lasius* ants nests, mainly *L. flavus*, which are almost always present where *Delplanqueia* occurs (Beirne 1952). Further research and rearing of caterpillars found on thyme may provide more insights.

Acknowledgements

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