Eupoecilia sanguisorbana (Lepidoptera: Tortricidae) new to the Belgian fauna

Ruben Meert

Abstract. During a targeted search on 6 August 2018, 5 larvae of *Eupoecilia sanguisorbana* (Herrich-Schäffer, 1856) were observed in the Nature Reserve "Vallée de la Holzwarche" in Büllingen (province of Liège). These are the first records of this species in Belgium. The larvae were found in the flower heads of great burnet (*Sanguisorba officinalis*). In 2019–2020 a breeding experiment revealed that this species is partially bivoltine in Belgium. In this article, general information about *E. sanguisorbana* is given and these first Belgian observations are described and illustrated in detail.

Samenvatting. Op 6 augustus 2018 werden tijdens een gerichte zoektocht in het natuurreservaat "La Vallée de la Holzwarche" te Büllingen (Liège) 5 rupsen gevonden van *Eupoecilia sanguisorbana* (Herrich-Schäffer, 1856), pimpernelsmalsnuitje. Het gaat om de eerste waarnemingen van deze soort in België. De rupsen werden aangetroffen in de bloemhoofdjes van grote pimpernel (*Sanguisorba officinalis*). In 2019–2020 kon door een kweekexperiment worden aangetoond dat de soort een partiële 2de generatie kent in België. Dit artikel geeft algemene informatie over deze soort. Verder worden deze eerste Belgische vondsten in detail beschreven en met fotomateriaal geïllustreerd.

Résumé. Le 6 août 2018, 5 chenilles d'*Eupoecilia sanguisorbana* (Herrich-Schäffer, 1856) ont été trouvées dans la réserve naturelle "La Vallée de la Holzwarche" à Büllingen, en province de Liège. Il s'agit des premières données de cette espèce pour la Belgique. Des expériences d'élevage en 2019–2020 ont révélé que cette espèce est partiellement bivoltine en Belgique. Cet article donne des informations générales concernant cette espèce, ainsi qu'une description détaillée et illustrée à l'aide de photos de ces premières observations belges.

Key words: Belgium – Bionomics – New record – *Sanguisorba officinalis*.

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Introduction

Belgium and Luxembourg were the only two countries from the western and central parts of the European mainland where *Eupoecilia sanguisorbana* (Herrich-Schäffer, 1856) had not been observed before 2018 (Aarvik 2013, De Prins & Steeman 2018). Considering its (at least former) presence in a nearby region in The Netherlands, and the local abundance of the host plant *Sanguisorba officinalis*, some nature reserves in the eastern part of Belgium seemed to be very suitable for this species.

Fig. 1. *Eupoecilia sanguisorbana*, larva in a flower head of *Sanguisorba officinalis,* Büllingen (LG), 06.viii.2018. © Ruben Meert.

Fig. 1. *Eupoecilia sanguisorbana*, rups in een bloemhoofdje van *Sanguisorbana officinalis*, Büllingen (LG), 06.viii.2018. © Ruben Meert.

Therefore, an intensive search was made on 6 August 2018 in the Nature Reserve 'La Vallée de la Holzwarche' in Büllingen (LG). Five caterpillars of *E. sanguisorbana* were located in flowerheads of *S. officinalis* (Fig. 1), but they were all in bad shape, probably due to parasites. Until 19 August 2018 several other caterpillars were found by other lepidopterologists (waarnemingen.be 2019) but none of them could be reared either. On 1 August 2019, ten more larvae were collected and kept indoors. Five of these emerged as adults between 28 August and 8 September 2019 (Figs. 6 & 9), and two more on 14 and 19 May 2020 (Fig. 9), after hibernation outdoors, showing that *E. sanguisorbana* is partially bivoltine in Belgium.

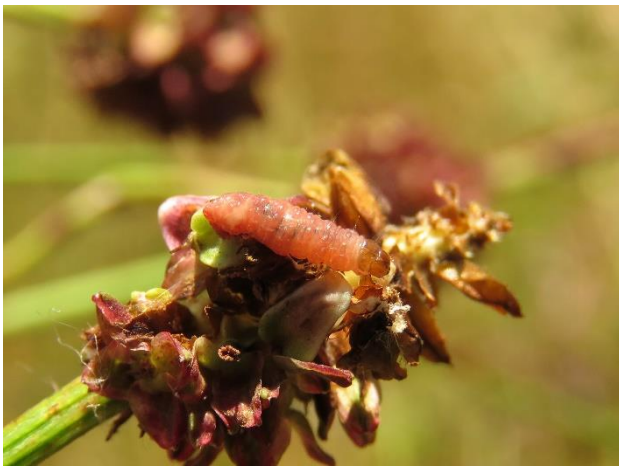

Fig. 1. *Eupoecilia sanguisorbana*, larva in a flower head of *Sanguisorba officinalis*, Büllingen (LG), 06.viii.2018. © Ruben Meert.

Fig. 1. *Eupoecilia sanguisorbana*, rups in een bloemhoofdje van *Sanguisorbana officinalis,* Büllingen (LG), 06.viii.2018. © Ruben Meert.

Distribution

Eupoecilia sanguisorbana occurs in most of Europe, except for the southern areas (Razowski 2002), Great

Britain and Ireland. In the northern part of Europe, its distribution is more scattered (Aarvik 2013). In the neighbouring countries of Belgium it is very local. In France it is considered to be scarce (Oreina 2019) and the actual occurrence in The Netherlands needs confirmation, as the last specimen was found in 1963 in Herkenbosch (province of Limburg) (pers. comm. T. Muus).

Fig. 3. Infested flower head of *Sanguisorba officinalis* (arrow indicating the discolored flowers within the flower head), Büllingen (LG), 01.viii.2019. © Ruben Meert.

Fig. 3. Geïnfesteerd bloemhoofdje van *Sanguisorba officinalis* (pijl duidt de bruin verkleurde bloempjes aan), Büllingen (LG), 01.viii.2019. © Ruben Meert.

Fig. 4. Cocoon of *Eupoecilia sanguisorbana*, 28.viii.2019, from a larva in a *Sanguisorba officinalis* flower head, Büllingen (LG), 01.viii.2019. © Ruben Meert.

Fig. 4. Cocon van *Eupoecilia sanguisorbana*, 28.viii.2019, van een rups uit een bloemhoofdje van *Sanguisorba officinalis* , Büllingen (LG), 01.viii.2019. © Ruben Meert.

In Germany, *E. sanguisorbana* has been observed in only 5 out of 16 Bundesländer, all located in the southern and eastern part of the country. In Sachsen-Anhalt and Thüringen it was last recorded in the period 1981–2000. More recently (2001–2016) it has been found in Baden-Württenberg, Bayern and Sachsen (Gaedike *et al*. 2017). The location in Belgium where it was found is only 3.5 km W of the border with the German Bundesland Nordrhein-Westfalen, so if the host plant is present, searching there might be rewarding.

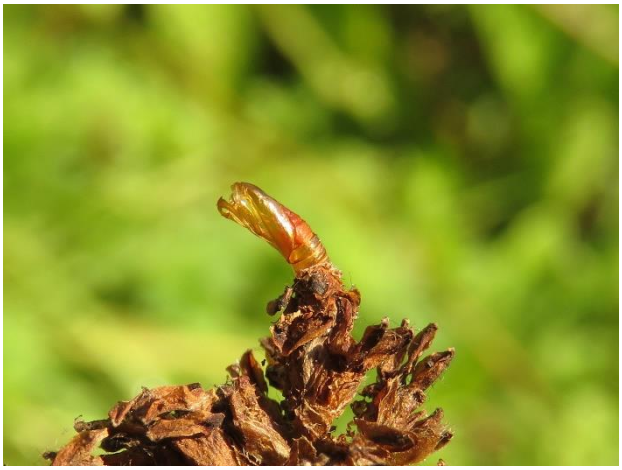

Fig. 5. Exuvium of *Eupoecilia sanguisorbana*, 08.ix.2019, from a larva in a *Sanguisorba officinalis* flower head, Büllingen (LG), 04.viii.2019. © Ruben Meert.

Fig. 5. Exuvium van *Eupoecilia sanguisorbana*, 08.ix.2019, van een rups uit een bloemhoofdje van *Sanguisorba officinalis,* Büllingen (LG), 04.viii.2019. © Ruben Meert.

Fig. 6. *Eupoecilia sanguisorbana*, 2nd generation imago, e.l. 28.viii.2019, bred from a larva in a seed head of *Sanguisorba officinalis,* Büllingen (LG), 01.viii.2019. © Ruben Meert.

Fig. 6. *Eupoecilia sanguisorbana*, imago van 2de generatie, e.l. 28.viii.2019, gekweekt van een rups uit een bloemhoofdje van *Sanguisorba officinalis,* Büllingen (LG), 01.viii.2019. © Ruben Meert.

Biology

Larvae of *E. sanguisorbana* feed in summer and autumn within the flower heads of *Sanguisorba officinalis*. First instars of the larva are yellowish to beige (Fig. 1). Due to their small size, they can live in the developing fruits on which they feed. Older larvae turn brownish red or dark pink (Fig. 2) and tunnel within the

flower head, still feeding on the soft developing fruits and seeds (Bina 2010). Not more than one larva could be found in infected flower heads (Bina 2010, pers. obs.). During the inventories in Büllingen, infected flower heads with nearly full-grown larvae were often recognizable by a subtle discoloration: one or a few single flowers had turned brown (Fig. 3).

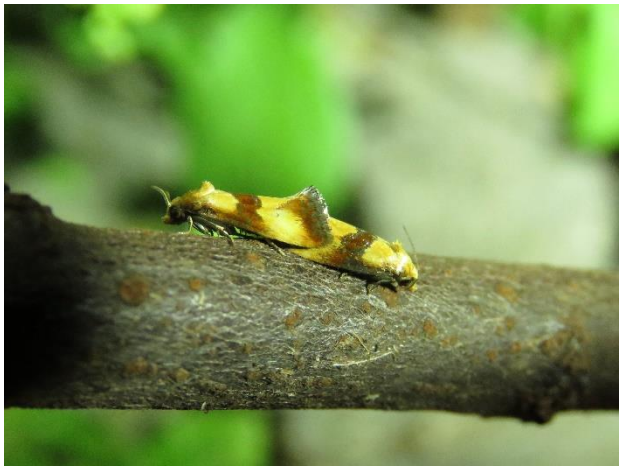

Fig. 7. *Eupoecilia sanguisorbana*, imago, e.l. 28.viii.2019, bred from a larva in a seed head of *Sanguisorba officinalis*, copula at 22:00, Büllingen (LG), 01.viii.2019. © Ruben Meert.

Fig. 7. *Eupoecilia sanguisorbana*, imago, e.l. 28.viii.2019, gekweekt van een rups uit een bloemhoofdje van *Sanguisorba officinalis*, copula om 22:00, Büllingen (LG) 01.viii.2019 © Ruben Meert.

When full grown, the larva leaves the host plant. It constructs a cocoon on the ground amongst debris, in which organic material is incorporated (Fig. 4). In the breeding investigation performed by the author, one caterpillar made its cocoon within the seed head (Fig. 5).

Fig. 8. *Eupoecilia sanguisorbana*, ♀ imago, e.l. 28.viii.2019, bred from a larva in a seed head of *Sanguisorba officinalis,* Büllingen (LG), 01.viii.2019. © Theo Garrevoet.

Fig. 8. *Eupoecilia sanguisorbana*, ♀ imago, e.l. 28.viii.2019, gekweekt van een rups uit een bloemhoofdje van *Sanguisorba officinalis*, Büllingen (LG), 01.viii.2019. © Theo Garrevoet.

The suggestion that *E. sanguisorbana* might be bivoltine in the southern regions of its distribution area (Razowski 2002) can be confirmed in Belgium, where a partial second generation certainly occurs. After hibernation, the larva pupates inside its cocoon from which the pupa protrudes before emerging (Fig. 5). According to Bina (2010), it is possible that some larvae hibernate twice, spreading risks in case of (too) early mowing so that larvae cannnot complete their development. Adults (Fig. 6) in different parts of Europe are on the wing from June to August (Razowski 2002); at least in Belgium a partial second generation can be found from August to September. Larvae produced by this 2nd generation are probably feeding in the flower heads of the host plant up to early October.

On 28 August 2019 at 22:00 a copula was observed in a breeding cage in which 2 freshly emerged adults were placed (Fig. 7). Although the female was kept alive for several days afterwards, no eggs were laid. In nature the eggs are laid on the flowers of the host plant, of which females tend to select the bigger flower heads (Bina 2010).

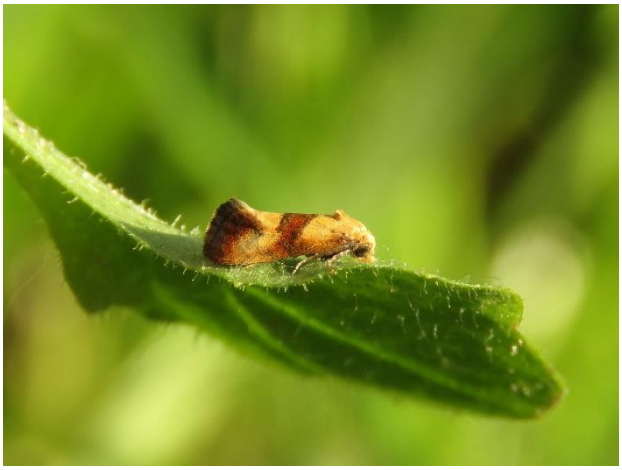

Fig. 9. *Eupoecilia sanguisorbana*, ♂ imago, e.l. 14.v.2020, bred from a larva in a seed head of *Sanguisorba officinalis,* Büllingen (LG), 01.viii.2019. © Ruben Meert.

Fig. 9. *Eupoecilia sanguisorbana*, ♂ imago, e.l. 14.v.2020, gekweekt van een rups uit een bloemhoofdje van *Sanguisorba officinalis,* Büllingen (LG), 01.viii.2019. © Ruben Meert.

Observations in Belgium

Up to now, all larvae of *E. sanguisorbana* have been found in *Sanguisorba officinalis* plants in a small area within the Nature Reserve "Vallée de la Holzwarche" (Valley of the River Holzwarche) in Büllingen in the province of Liège (LG). This reserve is situated between 560 m and 650 m altitude and is known for its high biodiversity (La biodiversité en Wallonie 2020).

Although several moth inventories have been organized in that area in the past decade, this species was never caught in a light trap (Bladmineerders.be 2020). Other research shows that *E. sanguisorbana* does come to light, but in most cases rather sparsely (Bina 2010). Therefore, it seems more efficient to search for larvae.

In August 2018 and 2019 several locations with *Sanguisorba officinalis* at the borders of the Lake of Bütgenbach (approximately 5 km W of Büllingen) and in Elsenborn (approx. 13 km NW of Büllingen) were investigated, but no larvae could be found there.

The author wishes to emphasize that fauna and flora are protected in Belgian nature reserves. Apart from that, *Sanguisorba officinalis* is a protected species in Wallonia.

Therefore, collecting is strictly forbidden without the required permits.

Conclusions

Eupoecilia sanguisorbana is added to the Belgian list of Lepidoptera and is also new for the province of Liège. In Belgium, this species is partially bivoltine.

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