

# *Chrysoesthia sexguttella* (Thunberg, 1794), a new species for Bulgaria (Insecta: Lepidoptera: Gelechiidae)

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**Abstract:** *Chrysoesthia sexguttella* (Thunberg, 1794) is reported for the first time from Bulgaria. The species was found on *Spinacia oleracea* in Vinarovo Village, Vidin Province, Northwestern Bulgaria. Set moth and female genitalia are illustrated.

**Keywords:** faunistics, genitalia, Microlepidoptera

## Introduction

Similarly to other Microlepidoptera families, the fauna of the family Gelechiidae is poorly known in Bulgaria. According to the Lepiforum e.V. (2023) 11 species from genus *Chrysoesthia* Hübner, 1825 are listed for Europe: *C. aletris* (Walsingham, 1919), *C. atriplicella* (Amsel, 1939), *C. bosae* (Walsingham, 1908), *C. drurella* (Fabricius, 1775), *C. eppelsheimi* (Staudinger, 1885), *C. falkovitshi* Lvovsky & Piskunov, 1989, *C. gaditella* (Staudinger, 1859), *C. halimionella* Bidzilya & Budashkin, 2015, *C. hispanica* Karsholt & Vives, 2014, *C. sexguttella* (Thunberg, 1794) and *C. verrucosa* Tokár, 1999. *Chrysoesthia halimionella* is the latest described species in Europe, similar to *C. sexguttella* (Bidzilya & Budashkin, 2015). For Bulgaria, only *C. drurella* is listed (Karsholt & Riedl, 1996; Karsholt, 2013).

A single gelechiid moth was observed and collected by the first author on 07.05.2023 in a private yard in Vinarovo Village, Vidin Province. The specimen was found on *Spinacia oleracea*.

This paper presents the first record of *Chrysoesthia sexguttella* (Thunberg, 1794) in Bulgaria.

## Methods

The moth was set and photographed under a stereomicroscope Stemi 2000-c (Zeiss) equipped with an EOS 1300D (Canon) camera and diffuse light source. The genitalia were prepared according to Robinson (1976) and photographed through an Amplival (Carl Zeiss Jena) compound microscope with an EOS 2000D (Canon) camera attached. The morphological description follows Gregersen & Karsholt (2022).

## Results and discussion

*Chrysoesthia sexguttella* (Thunberg, 1794)

Material: 1 ♀, Bulgaria, Vidin Province, Vinarovo Village, 44.0988°N, 22.8127°E, 147 m a.s.l., 7.v.2023, on *Spinacia oleracea*, genitalia slide No. 1/3.8.2023, in the collection of Institute of Biodiversity and Ecosystem Research, Sofia, Bulgaria.

Morphological notes (based on collected material, Fig. 1): Wingspan 8.5 mm, forewing length 4.0 mm.

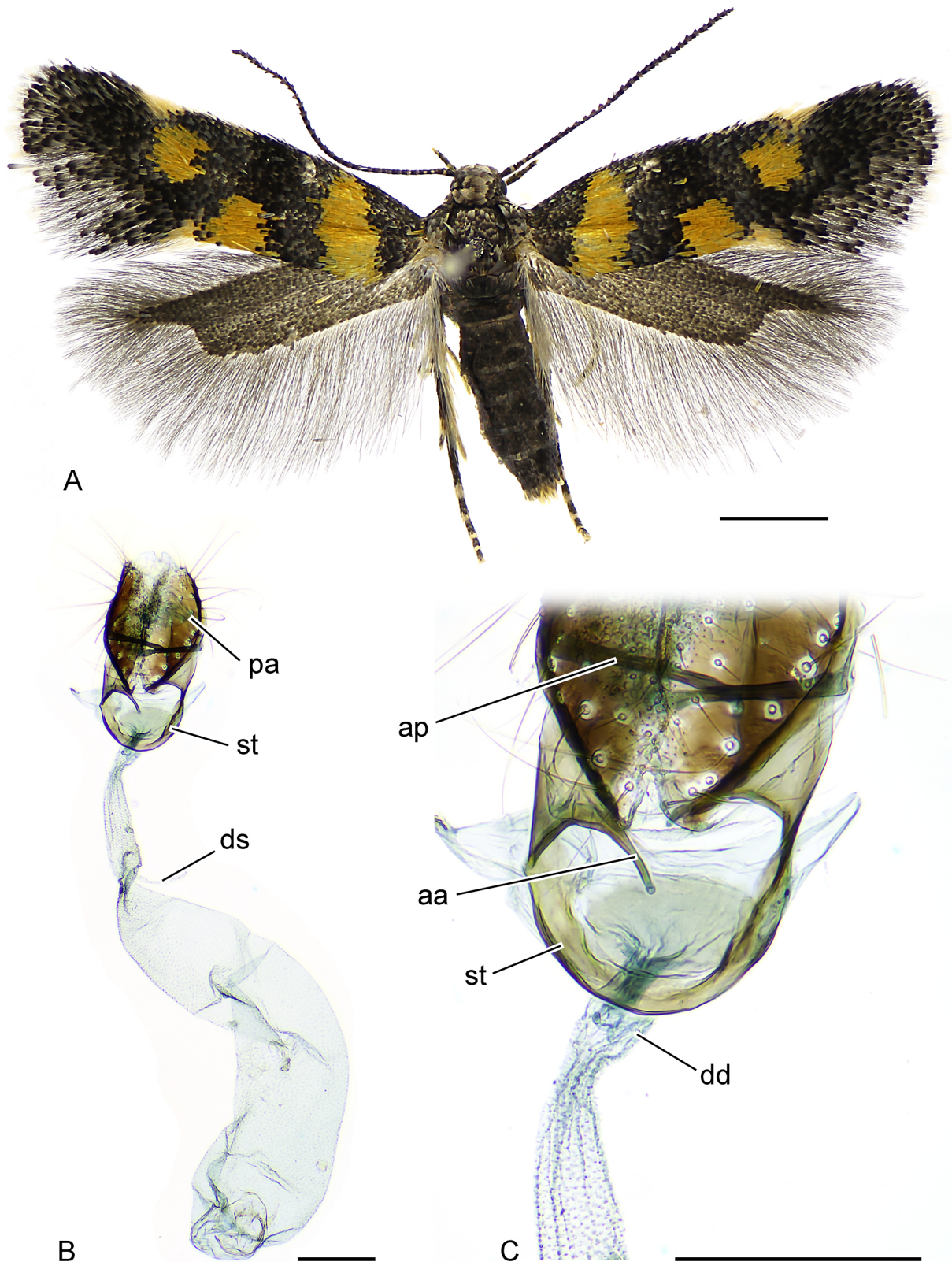


Fig. 1. *Chrysoesthia sexguttella* ♀, Bulgaria, Vinarovo, Vidin – (A) Habitus; (B) Genitalia; (C) Details of genitalia; (aa) apophysis anterior, (ap) apophysis posterior, (dd) diverticulum of ductus bursae, (ds) ductus seminalis, (pa) papilla analis, (st) sterigma. Scale bars: (A) 1 mm; (B, C) 100 µm.

Forewing pattern with large orange spots, typical for the southern populations. Female genitalia as described below. No male specimen was available for examination. A detailed description is provided by Gregersen & Karsholt (2022) as follows:

Wingspan 6–8 mm. Head and thorax irrorated blackish brown, slightly shiny; palp irrorated blackish with two whitish rings; segment 3 robust, whitish tipped. Forewing densely irrorated black with bluish tint; two silvery grey, indistinct fasciae; two or three, blackish bordered, orange spots; opposite costal/tornal spots cream white. Hindwing greyish brown. Abdomen irrorated blackish, slightly shiny. The orange spots of the forewing sometimes vary and may be very large. Most specimens from North-West Europe belong to the dark (nominotypical) form (f. *sexguttella*), whereas the more brightly coloured f. *auroguttella* (*naeviferella* auct.) is more common in the south. Male genitalia: Tegumen sub-triangular, anteriorly broad; uncus large with pair of lateral lobes; gnathos with medial part of lobe-like, membranous; valva with apical part large; sacculus moderately circular, with dense, strong denticles; phallus distally with small hook, pointing ventrally; vesica without spinules. Female genitalia: Papilla analis broad, distal half set with bristles; anterior apophysis strong, very short, sclerotised; segment VIII very short and wide with ventral, strongly protruding band on anterior margin (sterigma), surrounding antrum/ostium bursae; ostium circular (Gregersen & Karsholt, 2022).

Notes on biology: The host plants of the larvae are *Amaranthus*, *Atriplex*, *Bassia scoparia*, *Chenopodium* and *Spinacia* (Elsner et al., 1999). The larvae feed in a fully transparent blotch-mine with blackish frass clustered at the base or the middle and hibernate in a cocoon on the ground. The species is bivoltine and the adults fly from May to July and again in August (Gregersen & Karsholt, 2022). The habitat is ruderal vegetation, parks, gardens, roadsides, wastelands and vegetable crops (Elsner et al., 1999). Two species from genus *Agathis* Latreille, 1804 (Hymenoptera: Braconidae) and five species from genus *Pnigalio* Schrank, 1802 (Hymenoptera: Eulophidae) have been found as parasitoids of *C. sexguttella* (Triggiani, 1978; Yegorenkova & Yefremova, 2012).

Notes on distribution: *Chrysoesthia sexguttella* originally had a Palaearctic distribution from Europe to Japan (Elsner et al., 1999). The species is wide-


spread in Europe. According to the Fauna Europaea web site (Karsholt, 2013) it is known from Albania, Austria, Belarus, Belgium, Bosnia and Herzegovina, the United Kingdom, the Netherlands, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Montenegro, North Macedonia, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland and Ukraine. Recently the species has been reported for the first time from Croatia (Šumpich, 2013). *Chrysoesthia sexguttella* is listed for the lepidopteran fauna of Turkey (Koçak & Kemal, 2009), reported from Kashmir Himalaya, India (Razak et al., 2011) and introduced to North America (Pohl et al., 2018). Also from Japan a new species *C. heringi* (Kuroko, 1961) has been described, which is similar to *C. sexguttella* (Kuroko, 1961).

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