

***STIGMELLA VIMINETICOLA* (LEPIDOPTERA, NEPTICULIDAE), A NEW ADDITION TO THE LITHUANIAN FAUNA**

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Introduction

Pygmy moths (Lepidoptera: Nepticulidae) are recognized as highly specialized insects: larvae live inside green tissues of plants and are predominantly monophagous (Diškus & Stonis, 2012). Because of the concealed mining life-style of larvae, difficulty in imago rearing and very small size of adults, Nepticulidae have not been sufficiently studied in southern and eastern European countries and are very poorly known from many tropical regions (Stonis *et al.*, 2014, 2016).

The first general review of the Lithuanian fauna by A. Diškus was published as a chapter in the monograph by Puplesis & Diškus (2003) and dealt with 73 species. Later it was followed by a more contemporary and highly illustrated monograph by Diškus & Stonis (2012) reviewing 75 species. At the same time, a paper on *Glaucolepis lituanica* (Ivinskis & van Nieukerken, 2012), a rather exotic and exciting discovery in the central European fauna, and a report on *Stigmella centifoliella* (Stainton, 1884), a new species to the Lithuanian fauna, were published (Ivinskis *et al.*, 2012; Ivinskis & Rimšaitė, 2013). Therefore, being published simultaneously, these two last additions to the Lithuanian fauna were left without sufficient discussion in the extensive review by Navickaitė *et al.* (2014), prepared on the basis of Asta Navickaitė's doctoral studies.

The recent leaf-mine collecting in Vilnius City (2014–2016) resulted in the discovery of *Stigmella vimineticola* (Frey), i.e. one more addition to the Lithuanian fauna, and made a total of 78 species of the Lithuanian Nepticulidae.

Material and Methods

The material was collected in Vilnius City in 2014–2016 by Arūnas Diškus and is deposited in the collection of the Lithuanian University of Educational Sciences (with further re-deposition at the Zoological Museum, University of Copenhagen, Denmark). The species was identified using male and female adults, male and female genitalia, and leaf-mine samples, which could be characterized as rather specific.

Methods and protocols for collecting, dissecting and identifying species are outlined in Diškus & Stonis (2012) and Stonis *et al.* (2014). After macerating the abdomen in 10% KOH and subsequent cleaning, male genital capsules were removed from the abdomen and mounted ventral side uppermost. The phallus was removed and mounted alongside the genital armature. Abdominal pelts and female genitalia were stained with Chlorazol Black (Direct Black 38/Azo Black) and mounted in Euparal. Permanent slides were photographed and studied using a Leica DM2500 microscope and Leica DFC420 digital camera. The descriptive terminology of morphological structures follows Johansson *et al.* (1990) and Diškus & Stonis (2012) except for the term “aedeagus”,

which is referred here as “phallus”, and the term “cilia”, which is referred here as “fringe”. The taxonomic nomenclature follows Puplesis, 1994 and Puplesis & Diškus, 2003.

Records

Stigmella vimineticola (Frey, 1856)

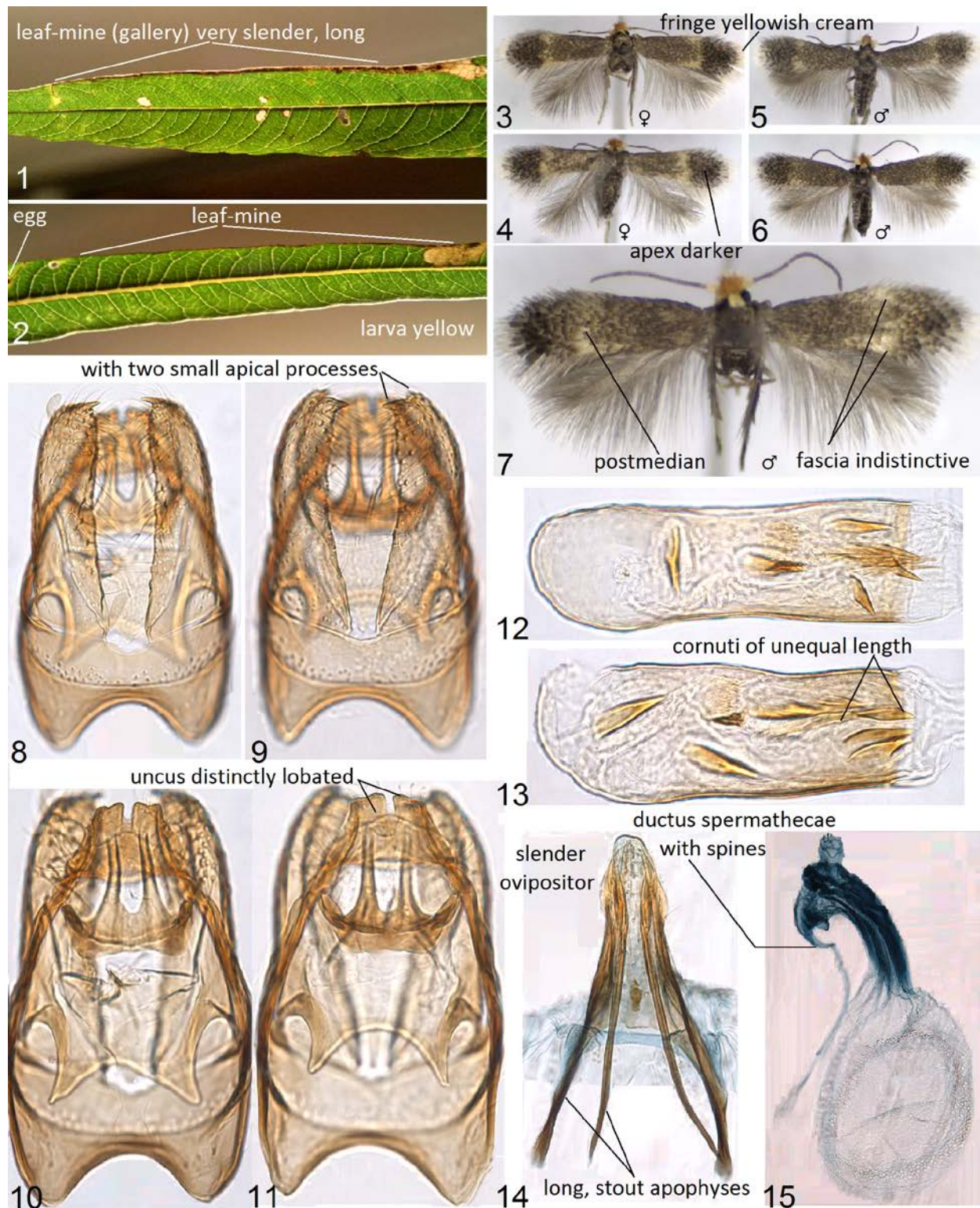
Vilnius City, 54°41'07.0"N, 25°15'19.3"E (54.685277, 25.255361), 09–13 10 2014, 6 ♂, 6 ♀, (leg. A. Diškus). Elevation 87 m, mining larvae on *Salix viminalis* L., field card no. 5175, genitalia slide nos. AD835♂, AD836♂, AD834♀ (Figs. 1–15). Also leaf-mines were observed: 17 leaf-mines at the same site in 2014, and 7–10 leaf-mines in 2015 and 2016.

Discussion

Though *Stigmella vimineticola* (Frey, 1856) is predominantly distributed in northern Europe, including all Scandinavian countries and Finland, northern Germany, the Netherlands, and the British Isles (Johansson *et al.*, 1990), the species is also known from some mountainous areas in central Europe and the Alps (van Nieuwerkerken *et al.*, 2012). It is quite likely that in future we will get to know more about geographical distribution of this species. However, currently we attribute *S. vimineticola* to the so-called disjunct Euronemoral chorological group.

Taxonomically, *S. vimineticola* belongs to the *S. salicis* species group and appears very similar to *S. salicis* (Stt.); it, therefore, has been often misidentified and confused with *S. salicis* and even with the not closely related and dissimilar *S. obliquella* (Stt.) (Johansson *et al.*, 1990; van Nieuwerkerken *et al.*, 2012). Taxonomy and identification of *Salix*-feeding European *Stigmella* can be troublesome: the traditional morphology has not yet been capable to solve the riddle of the *salicis* group, especially *S. salicis* and a few other cryptic species (see recent molecular analysis by van Nieuwerkerken *et al.*, 2012). However, we suppose that the combination of a forewing with a very weakly developed or absent fascia (particularly in males) (Figs. 5–7); a paler basal part but darker, contrasting forewing apex; a set of cornuti in the phallus with spine-like cornuti of usually unequal length (Figs. 12, 13); a distinctly bilobed uncus; long stout apophyses in the female genitalia (Fig. 14); a female abdominal apex narrowed to an usually rather sharply pointed ovipositor; a distinctive band-like signum comprised of minute scallop-shaped or dentate pectinations; spined ductus spermathecae; and long, very slender leaf-mines on *Salix viminalis* (Figs. 1, 2) or *S. elaeagnos* distinguishes *S. vimineticola* from all members of the *S. salicis* group, including the most similar *S. salicis* (Stt.).

After the ‘Formula of Evaluation of Abundance and Occurrence of Leaf-miners’ (see Diškus & Stonis 2012: 52–54), *S. vimineticola* is rare in Vilnius, Lithuania: known from a single and restricted locality but rather abundant (17 leaf-mines recorded at a single site in 2014, and 7–10 leaf-mines in 2015 and 2016).



Figures 1–15. *Stigmella vimineticola* (Frey, 1856). 1, 2 – leaf-mines; 3, 4 – female adults; 5–7 – male adults; 8 – male genitalia, capsule with phallus removed, genitalia slide no. AD835; 9 – same, genitalia slide no. AD836; 10 – same, dorsal view, genitalia slide no. AD835; 11 – same, genitalia slide no. AD836; 14 – female genitalia, apophyses, genitalia slide no. AD834; 15 – same, bursa copulatrix, genitalia slide no. AD834.

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***Stigmella vimineticola* (Lepidoptera, Nepticulidae) – nauja Lietuvos faunos rūšis**

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Santrauka

2014–2016 m. Vilniaus mieste buvo aptikta *Stigmella vimineticola* (Frey, 1856), kurios atradimas papildė Lietuvos Nepticulidae sąrašą iki 78 rūšių. Anksčiau *S. vimineticola* buvo dažnai painiojama su artimai giminiška *S. salicis* (Stt.), tačiau nuo pastarosios ir kitų *S. salicis* grupės rūšių *S. vimineticola* išsiskiria ilgomis, labai siauromis minomis ir šiais morfologijos požymiais: priekinių sparnų viršūninė ir pamatinė dalys tarpusavyje skiriasi spalva (sparnų pamatinė dalis paprastai ženkliai šviesenė nei sparnų viršūnė), priekinių sparnų juostelė menkai išsvystyta arba jos visiškai nėra, patinų kopuliacinio organo spaigliai dažniausiai yra skirtingo ilgio, galinė plokštelė (*uncus*) ryškiai dviskiautė, patelės pilvelis su labai siaura, didele kiaušdėte apofizės neįprastai stambios, ilgos, o sėklos kanalėlis spygliuotas.

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