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A new species of the *Phyllonorycter ulicicolella* group from the Iberian Peninsula (Lepidoptera: Gracillariidae)

A. Laštůvka & Z. Laštůvka

Abstract

A new species of the *Phyllonorycter ulicicolella* species group, *P. hispanicus* Laštůvka & Laštůvka, sp. n., is described from northern Spain and Portugal. It develops in thorns of *Genista hispanica* and probably in some other thorny species of this genus. The new species is closely related to *P. lapadiella* (Krone, 1909). The independence of the new species is evident from its wing pattern and specific biology; it is also supported by the DNA barcoding results. Adult, male and female genitalia are illustrated.

KEY WORDS: Lepidoptera, Gracillariidae, *Phyllonorycter*, COI, DNA Barcoding, new species, Spain, Portugal.

Una nueva especie del grupo de *Phyllonorycter ulicicolella* de la Península Ibérica
(Lepidoptera: Gracillariidae)

Resumen

Se describe una nueva especie del grupo de *Phyllonorycter ulicicolella*, *P. hispanicus* Laštůvka & Laštůvka, sp. n., del norte de España y Portugal. Se desarrolla en las espinas de *Genista hispanica* y probablemente en algunas otras especies espinosas de este género. La nueva especie está estrechamente relacionada con *P. lapadiella* (Krone, 1909). La independencia de la nueva especie es evidente por su patrón alar y la biología específica; también es apoyada por los resultados de códigos de barras de ADN. Se ilustran el adulto, las genitales del macho y de la hembra.

PALABRAS CLAVE: Lepidoptera, Gracillariidae, *Phyllonorycter*, COI, ADN códigos de barras, nueva especie, España, Portugal.

Introduction

The *Phyllonorycter ulicicolella* species group contains 11 known species which all develop in stem or thorn mines on shrubby Fabaceae. They occur mostly in western parts of the Mediterranean area. The species of this group are very difficult to distinguish from each other externally and often also in their genital morphology. They were treated by LAŠTŮVKA & LAŠTŮVKA (2006) within the study of the European *Phyllonorycter* species living on Fabaceae and particularly by LAŠTŮVKA *et al.* (2013). Various additional data were supplied by LAŠTŮVKA & LAŠTŮVKA (2009a, b, 2011), and new species described by NEL (2009), see also DE PRINS & DE PRINS (2005, 2011), and PÉREZ (2009).

Continuing research on *Phyllonorycter* species in the Iberian Peninsula brought the discovery of another new species of this group which is described in this contribution.

Material and methods

The material of the described species was collected by night at light (8 and 25 W fluorescent tubes, UV lamp 125 W), also by sweeping of the host plant bushes by day. Genitalia of both sexes were prepared in the usual way (e.g. ROBINSON, 1976). The genitalia are later preserved in glycerine tubes. The length of papillae anales has been measured together with apophyses, i.e. from the top of papillae to the end of apophyses posteriores. DNA barcoding of three specimens was performed at the Canadian Centre for DNA Barcoding (CCDB, Guelph), using standard high-throughput protocols described in IVANOVA *et al.* (2006). Full-length DNA barcodes (658 bp, COI-5P gene) were obtained for two specimens, a shorter sequence (631 bp) for the third one. (For details see LAŠTŮVKA *et al.*, 2013). The process ID and sample ID codes of the voucher specimens are given in the Material. Additional collecting and specimen data are accessible in the Life Data Systems under these codes (BOLD; www.boldsystem.org).

Phyllonorycter hispanicus A. Laštůvka & Z. Laštůvka, sp. n. (Figs. 1-4)

Material: Holotype ♂, Spain, Burgos, Santa Marina, 13-VI-2013, A. & Z. Laštůvka leg., coll. A. Laštůvka; Paratypes 6 ♂♂, 5 ♀♀, Spain, Burgos, 2 ♂♂, 4 ♀♀, 13-VI-2012 (2 specimens used for barcoding, sample ID LAB10spn and LAB11spn, process ID GRPAL1346-13, GRPAL1347-13), 1 ♂, 1 ♀, 14-VI-2013; Portugal, Trás-ós-Montes, Paçó, 2 ♂♂, 20-VI-2004, Montesinho, 1 ♂, 18-VI-2012 (barcoding sample ID LAB12spn, process ID GRPAL1348-13), all A. & Z. Laštůvka leg., coll. A. Laštůvka, 1 ♂, 1 ♀ from Spain, Burgos, coll. A. Vives / Museo Nacional de Ciencias Naturales, Madrid.

Diagnosis: *Phyllonorycter hispanicus* Laštůvka & Laštůvka, sp. n., differs from other species of the *P. ulicicolella* species group by the combination of its very small size, and of dark scaled borders of all strigulae and the basal streak. Only *P. baetica* Laštůvka & Laštůvka, 2006 is so small, but without these contrasting, dark bordered strigulae. The male genitalia of the new species are very similar to those of *P. pumila* Laštůvka & Laštůvka, 2006, which are larger (right valva length 0.68-0.72), cf. also LAŠTŮVKA *et al.* (2013). Other, externally somewhat similar *Phyllonorycter* species from other groups, as e.g. *P. cerasicolella* (Herrich-Schäffer, 1855), have more contrasted forewings with sharply bounded strigulae and distinctly different genitalia.

Description: Wingspan 5.5-6.6 mm; head ochreous brown, frons white, hairs on vertex dark brown to black, especially at their ends, white on collar; antenna grey, slightly dark-ringed; thorax ochreous orange, with an indistinct white central line; tegula white on inner edge; forewing ground colour weak, pale ochreous orange or ochreous rusty; four costal and two or three dorsal strigulae white, distinct, not connected, all distinctly bordered with dark brown scales on their inner margins; the basal streak narrow, almost straight, slightly bordered with dark scales on its fore margin; an elongate group of black scales between strigulae, more distinct in apex; cilia line distinct; hindwing greyish brown, more whitish in female, cilia ochreous; legs pale grey; abdomen greyish brown.

Male genitalia: Asymmetric, of the *Phyllonorycter ulicicolella* group morphology (cf. LAŠTŮVKA *et al.*, 2013). The right valva short, 0.60-0.62 mm, of equal width over its whole length, very similar to *P. pumila*; the row of spines begins approximately at its middle; the subapical spine distinct and stout; the left valva 0.59-0.61 mm, 2.5 times longer than broad, the row of spines begins at its middle; vinculum angular cranially.

Female genitalia: Papillae anales 0.33 mm, very short and flat, with dense long setae nearly on its whole surface; apophyses fine and relatively long; ostium bursae distinct, deeply concave caudally and comparatively convex cranially.

Relationship: The genitalia morphology and the DNA barcode analysis results demonstrate that the new species belongs to the *Phyllonorycter ulicicolella* species group. The DNA barcodes also bring unequivocal support to the distinction of *Phyllonorycter hispanicus* as a new species, with about 5.3% p-distance between this newly described species and its nearest neighbour which is

Phyllonorycter lapadiella (Krone, 1909). *Phyllonorycter hispanicus* creates a common clade with this species and with *P. hesperiella* (Staudinger, 1859) (Fig. 4). The intraspecific genetic variation between three barcoded specimens of *P. hispanicus* is 0.11-0.16%.

Biology. Larva develops in thorn mine on *Genista hispanica* L. subsp. *occidentalis* Rouy in northern Spain. In northern Portugal, the adults were collected by sweeping near stands of *Genista anglica* L. and *G. micrantha* Ortega, or at light in the oak (*Quercus pyrenaica*) forest with undergrowth of a small thorny *Genista* species. Adult VI; probably univoltine.

Distribution. NW Spain: Castilla y León; N Portugal: Trás-ós-Montes.

Etymology. Named after the species name of its host plant and also after one of the countries of its origin (an adjective “Spanish”).

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