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A revision of the *Elachista dispilella* complex (Lepidoptera: Gelechioidea: Elachistidae)

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Abstract

The *Elachista dispilella* group and its subordinate *E. dispilella* species complex are characterized. Identity of the long confused oldest names applicable for taxa in the *E. dispilella* complex, i.e., *E. dispilella* Zeller, *E. festucicolella* Zeller, and *E. distigmatella* Frey, is resolved. *Elachista dispilella* Zeller is the valid name for the species often identified as *E. festucicolella*, *E. steueri* Traugott-Olsen, or *E. manni* Traugott-Olsen. *Elachista distigmatella* Frey is the valid name for the species regularly identified as *E. dispilella*. The identity of *E. festucicolella* Zeller, so far entirely dubious, is clarified.

Nineteen species attributable to the *E. dispilella* complex *sensu* Traugott-Olsen are recognized. The following new synonymies are proposed: *Elachista steueri* Traugott-Olsen, 1990, **syn. nov.**; *E. manni* Traugott-Olsen, 1990, **syn. nov.**; *E. jaeckhi* Traugott-Olsen, 1990, **syn. nov.**; and *E. gebzeensis* Traugott-Olsen, 1990, **syn. nov.**, are considered synonyms of *E. dispilella* Zeller, 1839. *Elachista klimeschiella* Parenti, 2002 is synonymized with *E. festucicolella* Zeller, 1853; and *Elachista purella* Sruoga, 2000 with *E. levasi* Sruoga, 1998, **syn. nov.** Identification keys for males and females are provided. All species are diagnosed, the lesser known are also redescribed. Four new species are described: *Elachista implana* Kaila, **sp. nov.**, from Austria; *E. ripai* Kaila, **sp. nov.**, from Kyrgyzstan; *Elachista sitibunda* Kaila, **sp. nov.**, from Uzbekistan; and *Elachista laterotis* Kaila, **sp. nov.**, from Turkey.

Key words: nomenclature, taxonomy, new synonymy, new species, DNA barcoding, integrated taxonomy

Introduction

Elachistinae (Gelechioidea: Elachistidae) are a group of Lepidoptera with notoriously difficult species taxonomy. This situation has prevailed in several groups even in the presumably well-known European fauna (e.g., Traugott-Olsen 1988, 1990, 1992; Kaila 2011a, b, c, 2015; Kaila *et al.* 2001, Kaila & Junnilainen 2002, Kaila & Varalda 2004, Mutanen *et al.* 2013). The family concept of Elachistidae has been illusive, reflecting the uncertainties in the systematics of the superfamily in general. The most recent delineation of Elachistidae is suggested by Kaila *et al.* (2011) and formalized by Heikkilä *et al.* (2014). The generic classification of the Elachistinae was proposed by Kaila (1999) and elaborated further by Kaila and Sugisima (2011).

The *Elachista dispilella* complex was defined by Traugott-Olsen (1990) for a group of *Elachista* species that share the following combination of characters: unicolorous white or amber-coloured forewings with often two darker brown or grey spots as the sole markings; the male genitalia with uncus lobes curving outwards and tapering to a point. In addition, the phallus is ‘strong’ [large], bent, and has a conglomeration of long and short cornuti, or only one ‘strong’ cornutus. Traugott-Olsen considered 17 species as belonging to this complex. Subsequently, Kaila (1992) described one, and Sruoga (Sruoga & Puplesienė 1998; Sruoga 2000) two further species.

The delineation of the *E. dispilella* complex is not entirely unequivocal as there are other species and species complexes that display at least some of these characteristics. Even so, it is a practical unit for structuring the species-rich *E. dispilella* group into manageable, and for the most part, identifiable units. Kaila (1999) attributed this group to the subgenus *Apheloesitia* of *Elachista*. Kaila (1997) suggested an informal division of the species of this subgenus to two main groups, based on the shape of the juxta. In this grouping, the species with a dorsally projected tongue-shaped appendix in the median plate of the juxta are attributed to the *E. bedellella* group. This circumscription is narrower than the one proposed by Traugott-Olsen and Nielsen (1977) in which the *E. bedellella* group is equivalent to the subgenus *Apheloesitia sensu* Kaila (1997). Subsequently, Kaila (2007, 2012) implied the presence of a probably monophyletic, informal *E. dispilella s. l.* group, of which the *E. dispilella* complex of Traugott-Olsen (1990) is a subset. Members of the *E. dispilella* group are characterized by a narrow valva with an elongate cucullus, and phallus without caecum, and the basal opening posteriorly oriented in the male genitalia. The papillae anales of the females are always entirely membranous, triangular in lateral aspect, and ventrally with a basal swelling. The swelling seems to be a unique character defining the *E. dispilella* group (Kaila 1999, Kaila & Sugisima 2011). This clade is probably monophyletic itself, yet likely subordinate to both *E. argentella* group *sensu* Kaila (1997) and *E. bedellella* group (Kaila 1999, Kaila & Sugisima 2011). The *Elachista dispilella* group comprises the *E. dispilella*, *E. triseriatella*, and *E. dispunctella* complexes as defined by Traugott-Olsen (1988, 1990, 1992), and a miscellanea of taxa presently not placed in any species complex. Exemplar species representing the unplaced taxa of the *E. dispilella* group are *E. deceptricula* Staudinger, 1880, illustrated by Nielsen & Traugott-Olsen (1978), *E. subula* Parenti, 1991, and *E. chamaea* Kaila, 2003 (Kaila *et al.*, 2003). In total, the *E. dispilella* group comprises nearly 100 species, all occurring in the Old World.

The species taxonomy of the *E. dispilella* complex is difficult and currently confused. The confusion stems in part from misconceptions of the oldest names (as detailed below) and dubious characterizations of species introduced by Traugott-Olsen (1990), with no accompanying diagnoses to explain the supposed differences between or among species. A close scrutiny of the species descriptions and comparisons, along dissection experiments based on actual samples, indicates that the genitalia are easily distorted by the amount of pressure applied to them during dissections; in particular, this affects the apparent length and direction of the cornuti.