

First record of Nepticulidae from the Maltese Islands (Lepidoptera)

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ABSTRACT. *Stigmella aurella* is recorded for the first time from the Maltese Islands. This record is also the first for the family Nepticulidae. Information on the biology and distribution of the species is included.

KEY WORDS. Lepidoptera, Nepticulidae, *Stigmella aurella*, Malta, new record.

INTRODUCTION

The family Nepticulidae includes some of the smallest Lepidoptera known to science, some having a wingspan of less than 3.0 mm. Most species within this family are leaf-miners, although a few species mine seeds or bark of trees. The family Nepticulidae has a worldwide distribution and is represented in Europe by 242 species in 8 genera (NIEUKERKEN, 2004). The genus *Stigmella* Schrank, 1802 has an eastern Palaearctic distribution, with 107 European species (NIEUKERKEN, 2004). The family Nepticulidae is being recorded for the first time from Malta.

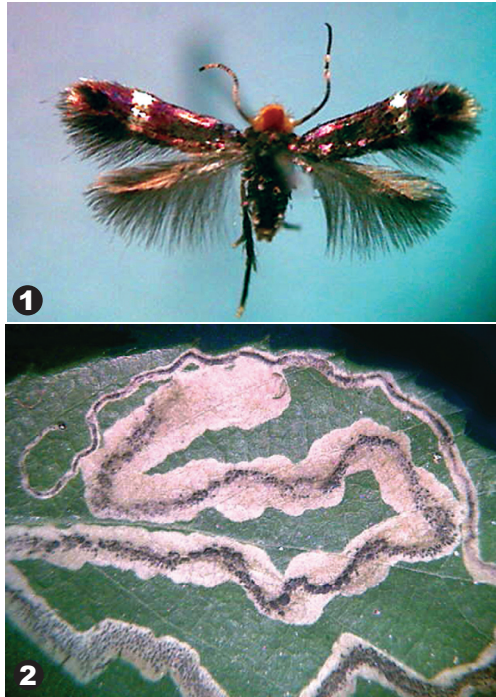
Stigmella aurella (Fabricius, 1775)

Material examined: MALTA: Naxxar, 26.ii.2003, 1 ex., bred from larva; Mistra valley, 30.i.2006, 1 ex., bred from larva (on *Rubus ulmifolius* Schott); Mosta, Wied ta' l-Isperanza, 8.iii.-17.iv.2007, 6 exs., bred from larvae (on *Rubus ulmifolius* and *Rubus caesius* L.). All material was collected by the author and dates provided indicate emergence of adults.

Short description: Adult male as in Fig. 1. The wing span of the specimens examined varied from 4.5 mm - 5.2 mm. Head rich orange with collar dark bronzy fuscous. Forewings copper purple; a metallic, golden fascia beyond the middle, preceded by a deep purple fascia with violet reflections. Apical area purplish. Cilia purple with a silvery sheen at the tips. Hind wings grey.

Distribution: This moth occurs in all countries bordering the northern Mediterranean. It is found in the larger islands of the Mediterranean Basin, most of central Europe, the Canary Islands and the Azores, Great Britain, Ireland and Northern Ireland, the Ukraine and European Russia (NIEUKERKEN, 2004). It is also known from North Africa.

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Figures 1 – 2: *Stigmella aurella*. **1** – adult male; **2** – leaf mine on *Rubus ulmifolius*.

Ecology: The female lays a single egg on or near a lateral vein, on either side of the leaf (EMMET, 1983). The larva exits the egg from the base directly into the leaf and starts the mine, which develops into a long sinuous gallery (Fig. 2). It widens gradually and very rarely crosses itself. The frass is at first compact and linear but later it is dispersed, being absent from the very last part. Up to three mines could be present on one leaf. The larva leaves the mine when ready to pupate and very often drops down to the ground, where it spins a pale ochreous or sometimes greenish cocoon. Pupation lasts between 27-33 days. Throughout most of its distribution range, this species goes through two generations a year, one between late April and May and another during July/August (EMMET, 1983). Locally, larvae were collected between late January and mid-April suggesting that the species flies earlier, either in two successive overlapping generations or in a single extended generation. In Malta, *Stigmella aurella* was observed to mine leaves of *Rubus ulmifolius* and *R. caesius*. Elsewhere, the species was also recorded on *Agrimonia*, *Fragaria* and *Geum* (PARENTI, 2000). HASLAM *et al.* (1977) listed *Fragaria moscata* Duchesne, as occurring locally and several varieties of strawberries are extensively cultivated in Malta. These could also potentially be used by this species as a host plant. At least two unidentified parasitic wasps were reared from *S. aurella* in Malta. One species emerged from the 3rd or 4th instar larva and pupated inside the mine. The other species remained inside the larva (even after it spinned the pupal cocoon), from where it emerged as an adult.

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