

Rearing of seven eulophids from microlepidoptera larvae in South Finland (Hymenoptera: Chalcidoidea, Eulophidae)

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Seven species of Eulophidae were reared in South Häme, South Finland from larvae of their microlepidopteran host species. Two species, *Pnigalio epilobii* Bouček, 1966 and *Sympiesis laevifrons* Kamijo, 1965, are new to the fauna of Finland and the latter is also new to Europe.

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Records of rearings of Eulophidae

Author AV has studied the fauna of Microlepidoptera in South Häme for 30 years, including rearing several species from their larvae. In 2022, his rearings yielded seven species of chalcidoid wasps which were studied and identified by author VV. The leaf-mines of the host moths were put into glass jars and kitchen paper was added. The rearings were performed indoors at room temperature. One overwintering was done outside in a sheltered place.

Miotropis unipuncta (Nees, 1834) was reared from *Coleophora flavipennella* (Duponchel) (Coleophoridae) on *Quercus robur*. Larvae of *C. flavipennella* on leaves *Q. robur* were taken on 5.6.2022 for rearing in Janakkala, Turenki, Rotarypuisto (6758:3372) and one female of *M. unipuncta* emerged from the sack of the moth in the fall of 2022.

Pnigalio epilobii Bouček, 1966 (Fig. 1) was reared from *Mompha langiella* (Hübner) (Mompidae) on *Epilobium hirsutum*. Leaf mines of *M. langiella* on *E. hirsutum* were taken for rearing on 3.7. and 15.7.2022 in Janakkala, Turenki (6759:3371). Four males and eighteen females of *P.* emerged from the leaf mines in July–August 2022.

Sympiesis dolichogaster Ashmead, 1888 was reared from *Calybites phasianipennellus* (Hübner) (Gracillariidae) on *Lysimachia vulgaris*. Leaf mines of *C. phasianipennellus* on *L. vulgaris* were taken for rearing on 23.8.2022 in Janakkala (6758:3371) and one female of *S. dolichogaster* emerged from the leaf mine in August–September 2022.

Sympiesis laevifrons Kamijo, 1965 (Fig. 2) was reared from *Phyllonorycter joannisi* (Le Marchand) (Gracillariidae) on *Acer platanoides*. Leaf mines of *P. joannisi* on *A. platanoides* were taken for rearing on 2.10.2022 in Janakkala, Turenki, Lyylinpuisto (6758:3372) and one female of *S. laevifrons* emerged from the leaf mine in the fall of 2022.

Sympiesis notata (Zetterstedt, 1838) was reared from *Cochylidia implicitana* (Wocke) (Tortricidae) on *Tanacetum vulgare*. Larvae of *C. implicitana* on the flower heads of *T. vulgare* were taken for rearing on 10.7.2022 in Hämeenlinna (6765:3365) and one female of *S. notata* emerged from the larvae together with some moths in July–August.

Sympiesis sericeicornis (Nees, 1834) was reared from *Choreutis pariana* (Clerck) (Choreutidae) on *Malus* sp. Larvae of *C. pariana* on *Malus* sp. were taken for rearing from larval webs on 21.8.2022 in Hämeenlinna (6766:3365) and one female of *S. sericeicornis* emerged together with some moths in August–September 2022.

Derostenus punctiscuta Thomson, 1878 was reared from from *Stigmella lonicerarum* (Frey, 1856) (Nepticulidae) on *Lonicera xylosteum*. Leaf mines of *S. lonicerarum* on *L. xylosteum* were taken for rearing on 16.9.2022 in Hämeenlinna (6778:3343) and after hibernation one male of *D. punctiscuta* emerged in spring of 2023.

Discussion

Miotropis unipuncta is a common species in Finland. Five other species of Coleophora are mentioned as its hosts by Noyes (2019), but not *C. flavipennella*.

Pnigalio epilobii is a new species for the fauna of Finland. It is known as a parasitoid of *Mompha fulvescens* (Haworth) on *Epilobium angustifolium* from Germany and Czech Republic, and the species is also known from England, Sweden (Lund in Skåne) and Azerbaijan (Bouček 1966) as well as the Netherlands (Gijswijt 2003). The Finnish females are 1.6–2.3 mm long and males 1.4–1.7 mm long (Fig.1). They fit the original description of Bouček (1966) well. The Finnish rearing provided a new host and a new host plant for the species.



Fig. 1. *Pnigalio epilobii* Bouček, 1966. Female specimen <http://id.luomus.fi/GL.10318> (a–b); male specimen <http://id.luomus.fi/GL.10319> (c–d).

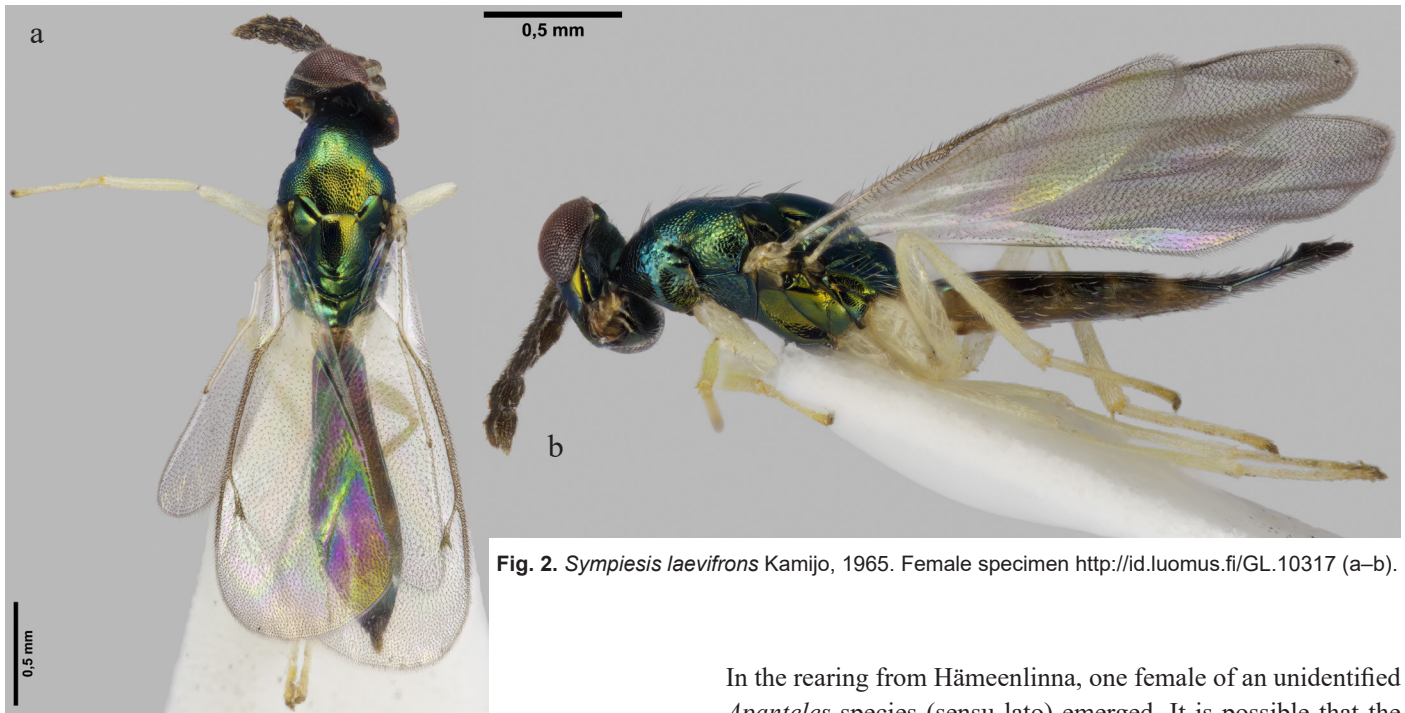


Fig. 2. *Sympiesis laevifrons* Kamijo, 1965. Female specimen <http://id.luomus.fi/GL.10317> (a–b).

Sympiesis dolichogaster is known from South Finland. According to Noyes (2019), its host range is very large and contains species from seven families of Lepidoptera. Many species of Gracillariidae are mentioned, but not *Calybites phasianipennellus*.

Sympiesis laevifrons was described from Hokkaido, Japan (Kamijo 1965) and has since been found also from the Russian Far East (Noyes 2019). It has been reared from many species of *Lithocolletis* (= *Phyllonorycter*) on *Quercus*, *Alnus* and *Malus*.

The species was identified by using the key of Storozheva (1981). The Finnish female is 2.6 mm long and it fits the original description of Kamijo (1965) well. It is a new species to Finland and also new to Europe. The Finnish host has not been reported earlier for the species.

Sympiesis notata is a common species in Finland. Its host range contains species of Coleophoridae, Gelechiidae, Gracillariidae, Momphidae and Tortricidae (Noyes 2019). *Cochylidia implicitana* is a new host.

Sympiesis sericeicornis is a common species in Finland. Its host range includes species of several families of Lepidoptera, but Choreutidae is missing (Noyes 2019). In the same list, five species of *Apanteles* (Hymenoptera: Braconidae) are mentioned as its parasitoid hosts. The five species belong to *Apanteles*, *Cotesia* and *Pholetesor* according to Fernandez-Triana et al. (2020). In Taxapad 2012 (Yu et al. 2012), three different species of *Apanteles* and three species of *Protapanteles* are listed under *Choreutis pariana*. These species are now placed in *Apanteles*, *Dolichogenidea* and *Glyptapanteles* (Fernandez-Triana et al. 2020).

In the rearing from Hämeenlinna, one female of an unidentified *Apanteles* species (sensu lato) emerged. It is possible that the reared *Sympiesis* female was a hyperparasitoid of *Choreutis*.

Derostenus punctiscuta is known from southern Finland. It has been reared from 16 species of *Stigmella* (Hansson 1986, Noyes 2019). *Stigmella lonicerarum/Lonicera xylosteum* is a new host for it.

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