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Leafminers (Diptera: Agromyzidae) of the Belgian fauna

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Abstract

From 1990 till 1992 leafmines on different plant species were collected at different localities in Belgium. 24 different species of Agromyzidae were reared. 9 species are new to the Belgian fauna.

Samenvatting

Van 1990 tot 1992 werden in verschillende localiteiten in België bladminen verzameld. Het uitkweken tot adulte vliegen resulteerde in 24 soorten Agromyzidae. Hiervan zijn 9 soorten nieuw voor de Belgische fauna.

Introduction

Agromyzidae is a family of exclusively phytophagous insects. The larvae of most species are leafminers. The larvae of other species are known to mine in stems, roots, seeds or even in the cambium of young trees. Some species induce galls (SPENCER, 1990; VON TSCHIRNHAUS, 1992).

The Belgian Agromyzid fauna has been poorly investigated. DE BRUYN & VON TSCHIRNHAUS (1991) give a survey of the Belgian Agromyzid fauna. In their list 88 species of Agromyzidae for the Belgian fauna are mentioned. Recently, four species, living on *Phragmites australis* (Cav.) Trin. ex Steud, were added (SCHEIRS & DE BRUYN, 1992). Compared to the Agromyzid fauna of the surrounding countries (United Kingdom: 313 (SPENCER, 1972), Netherlands: > 150 (OOSTERBROEK, 1981), Germany: > 320 (SCHUMANN, 1992)) this number is very low. Moreover, older reports are frequently erroneous due to numerous recent revisions and new descriptions (e.g. GRIFFITHS, 1963; NOWAKOWSKI, 1973; SPENCER, 1981; VON TSCHIRNHAUS, 1992). In general, identification of Agromyzidae based upon external morphological characters is hampered due to the high external

similarity between species. In most cases a preparation of the male genitalia is needed for correct identification. Investigations on the systematic value of female genitalia has only started recently. Thus, identification of female specimens can cause difficulties or can even be impossible (NOWAKOWSKI, 1962).

When adults are reared from their hostplant, additional characteristics such as kind of hostplant, form and position of the mine, spot where pupation takes place and the morphology of the pupae can give additional features for the identification of the adults (HERING, 1935, 1936, 1937; GRIFFITHS, 1963; SPENCER, 1972, 1976).

Material and Methods.

Mined leaves were collected from 1990 till 1992 at different localities in Belgium. Leafmines containing larvae were kept in a sealed plastic bag until the larvae pupated. The pupae were kept in a glass tube with a moist slip of paper to prevent desiccation. After pupation the empty leafmines were dried and preserved.

To identify the reared flies we used the following keys: GRIFFITHS (1963), SPENCER (1976) and NOWAKOWSKI (1973).

The identified Agromyzidae are stored in the authors collection at the University of Antwerp (RUCA). Later they will be deposited at the Royal Belgian Institute of Natural Sciences, Brussels.

Results

Rearing of the larvae resulted in 24 species (Table 1). Nine species turned out to be new to the Belgian fauna. The latter are briefly discussed below. The dates mentioned are the collecting dates of the mines. Behind the collecting date we mention the number of reared adults.

Agromyza albipennis MEIGEN, 1830

Material examined: Geel (FS.47), 2.VI.92, 1♂ + 3♀♀; Schilde (FS.07), 24.VI.92, 1♂ + 1♀.

Host plants are limited to Poaceae: Poaeae, Aveneae, Triticeae and Paniceae (SPENCER, 1990; VON TSCHIRNHAUS, 1992). The most common host is *Phalaris arundinacea* (SPENCER, 1990). All individuals of *A. albipennis* obtained during the present study were reared from mines on *P. arundinacea* (Table 1).

The egg is normally laid near the margin of the leaf. The larva makes at first a small mine towards the leaf tip, then turns and produces a broad irregular channel, eating towards the base of the leaf. Pupation can take place in- or outside the mine. The puparium can be reddish, brown or black.

A. albipennis is a holarctic species. Very common in western Europe, present in Japan, widespread in Canada and also present in America (GRIFFITHS, 1963; SPENCER, 1976, 1990).

Table 1. Species and their hostplants found during this study. Species new to the Belgian fauna are printed in bold.

<i>Agromyza albipennis</i> MEIGEN	<i>Phalaris arundinacea</i> L.
<i>Agromyza hendeli</i> GRIFFITHS	<i>Phragmites australis</i> (CAV.) TRIN. ex STEUD.
<i>Agromyza nigripes</i> MEIGEN	<i>Deschampsia caespitosa</i> (L.) BEAUV.
<i>Agromyza phragmitidis</i> HENDEL	<i>Phragmites australis</i> (CAV.) TRIN. ex STEUD.
<i>Cerodontha (P.) incisa</i> (MEIGEN)	<i>Phalaris arundinacea</i> L.
	<i>Phragmites australis</i> (CAV.) TRIN. ex STEUD.
	<i>Calamagrostis epigejos</i> (L.) ROTH.
	<i>Dactylis glomerata</i> L.
<i>Cerodontha (Diz.) iraeos</i> (ROB.-DESV.)	<i>Iris pseudacorus</i> L.
<i>Cerodontha (P.) phragmitidis</i> NOWAKOWSKI	<i>Phragmites australis</i> (CAV.) TRIN. ex STEUD.
<i>Cerodontha (P.) pygmaea</i> (MEIGEN)	<i>Deschampsia caespitosa</i> (L.) BEAUV.
<i>Chromatomyia horticola</i> (GOUREAU)	<i>Solanum nigrum</i> L.
	<i>Sonchus oleraceus</i> L.
<i>Chromatomyia milii</i> (KALTENBACH)	<i>Holcus lanatus</i> L.
	<i>Milium effusum</i> L.
	<i>Poa annua</i> L.
	<i>Poa pratensis</i> L.
<i>Chromatomyia nigra</i> (MEIGEN)	<i>Agrostis tenuis</i> SIBTH.
	<i>Cynosurus cristatus</i> L.
	<i>Holcus lanatus</i> L.
	<i>Lolium perenne</i> L.
	<i>Poa annua</i> L.
<i>Chromatomyia primulae</i> ROB.-DESV.	<i>Primula elatior</i> (L.) HILL
	<i>Primula</i> sp. (Cultivar)
<i>Chromatomyia syngenesiae</i> HARDY	<i>Sonchus asper</i> (L.) HILL
	<i>Sonchus oleraceus</i> L.
<i>Galiomyza morio</i> (BRISCHKE)	<i>Galium mollugo</i> L.
<i>Liriomyza eupatorii</i> (KALTENBACH)	<i>Eupatorium cannabinum</i> L.
<i>Liriomyza pusio</i> (MEIGEN)	<i>Arrhenatherum elatius</i> (L.) BEAUV.
<i>Liriomyza tanacetii</i> DE MEJERE	<i>Tanacetum vulgare</i> L.
<i>Liriomyza taraxaci</i> HERING	<i>Taraxacum</i> sp.
<i>Phytomyza conyzae</i> HENDEL	<i>Pulicaria dysenterica</i> (L.) BERNH.
<i>Phytomyza ilicis</i> CURTIS	<i>Ilex aquifolium</i> L.
<i>Phytomyza marginella</i> FALLÉN	<i>Lapsana communis</i> L.
<i>Phytomyza ranunculi</i> (SCHRANK)	<i>Ranunculus</i> sp.
<i>Phytomyza rufipes</i> MEIGEN	<i>Brassica rapa</i> L.
<i>Phytomyza spondylii</i> ROB.-DESV.	<i>Heracleum sphondylium</i> L.

***Cerodontha (Poemyza) pygmaea* (MEIGEN, 1830)**

Material examined: Berchem (ES.97), 20.VIII.91, 2♂♂ + 1♀ and 21.VIII.91, 1♂.

Hosts Poaceae: Aveneae, ? Bromaeae, Melicidae, Poaeae, Triticeae (SPENCER, 1990; VON TSCHIRNHAUS, 1992).

According to SPENCER (1976), several larvae normally feed together forming a linear mine. The mines in the leaves of *Deschampsia caespitosa* we examined mostly contained only 1 larva, sometimes 2 and as an exception 3 larvae. The larva pupates in the mine. The shining black puparium resembles that of *Cerodontha incisa*. The adults of *C. pygmaea* and *C. incisa* also agree closely and are frequently confused.

Common in Europe, also present in North America (NOWAKOWSKI, 1973; SPENCER, 1976, 1990).

***Chromatomyia syngenesiae* HARDY, 1849**

Material examined: Wilrijk (ES.97), 9.VI.91, 1♂.

C. syngenesiae is a polyphagous species that almost exclusively feeds on Asteraceae but has occasionally been reared from other families: Apiaceae (*Daucus*) and Fabaceae (*Pisum*) (GRIFFITHS, 1967; SPENCER, 1990; VON TSCHIRNHAUS, 1992).

The larva forms a whitish linear mine and pupates in the leaf at the end of the mine with the anterior spiracles projecting through the epidermis. The puparium is white.

Widespread in Europe but less common in the south. Has been introduced in Australia, New Zealand, eastern and western U.S.A. (SPENCER, 1976, 1990).

***Galiomyza morio* (BRISCHKE, 1881)**

Material examined: Chairière (FR.32), 21.VII.92, 1♂.

The generic position of this species was long unclear until it was finally included in the small genus *Galiomyza* (SPENCER, 1981).

The larvae of this species form small, individual mines on *Asperula*, *Galium*, *Rubia* and *Sherardia* (SPENCER, 1990).

Occurring widely in Europe (SPENCER, 1976).

***Liriomyza pusio* (MEIGEN, 1830)**

Material examined: Wilrijk (ES.97), 14.VI.91, 3♂♂ + 2♀♀ and 16.VI.91, 1♂; Gent (ES.45), 18.VI.91, 1♂; Antwerpen L.O. (ES.97), 12.VIII.91, 1♂.

The only known host is *Arrhenaterum* (SPENCER, 1990; VON TSCHIRNHAUS, 1992). The puparium is brown.

Recorded from Netherlands, Austria, Germany, England, Denmark and Finland (SPENCER, 1972, 1976; VON TSCHIRNHAUS, 1992).

***Liriomyza tanaceti* DE MEJERE, 1924**

Material examined: Geel (FS.47), 2.VI.92, 1♂.

This is a monophagous species which lives on *Tanacetum* (SPENCER, 1990).

The larva forms a narrow linear mine, following the veins of the leaf. Due to the fact that the larva seems to follow the veins the mine gets a branched shape. The puparium is yellowish.

Widespread and not uncommon in most of western Europe (SPENCER, 1976).

***Phytomyza conyzae* HENDEL, 1920**

Material examined: Schilde (FS.07), 5.VII.92, 1♂ + 2♀♀.

Hosts: most frequently found on *Inula*, but also recorded on *Anaphalis*, *Buphthalmum*, *Dittrichia*, *Pallenis*, *Pulicaria*, *Telekia* (SPENCER, 1990) and *Arnica* (VON TSCHIRNHAUS, 1992).

The larva forms an irregular mine which can be both on the upper and lower leaf surface. Pupation can take place in or out the mine, the puparium is black to dark brown.

Widespread in Europe, particularly common in the Mediterranean area (SPENCER, 1976).

***Phytomyza marginella* FALLÉN, 1823**

Material examined: Wilrijk (ES.97), 15.VI.92, 1♂.

This species is known to feed on the following 12 genera: *Cicerbita*, *Crepis*, *Hieracium*, *Lactuca*, *Lapsana*, *Leontodon*, *Mycelis*, *Picris*, *Prenanthes*, *Reichardia*, *Sonchus* and *Taraxacum* (SPENCER, 1990).

The larva forms an unusually long, narrow linear mine, frequently largely on the underside of the leaf. Pupation takes place externally, the puparium is black.

Widespread in most of Europe (SPENCER, 1976).

***Phytomyza rufipes* MEIGEN, 1830**

Material examined: Berchem (ES.97), 27.IV.92, 1♀.

The host plants are exclusively Cruciferae, most commonly found on *Brassica* sp. This species is considered as a major pest of cultivated Crucifers in Europe (SPENCER, 1973, 1992).

The larva forms a short mine from the oviposition site to the nearest vein which is then followed downward, sometimes they also mine the stem.

Recorded in most of Europe, also Egypt, Canary Is., Madeira, Canada and United States (SPENCER 1973, 1976, 1990).

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