

New records for distribution of *Phytoliriomyza melampyga* (Loew, 1869) (Diptera: Agromyzidae) and its host plants in Bulgaria

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Abstract. This study provides new data on the distribution of *Phytoliriomyza melampyga*, as well as information on its host plants in the country.

Key-words: new records, Agromyzidae, *Impatiens glandulifera*.

Introduction

The Agromyzidae is one of the largest families in the order Diptera, with more than 2790 species worldwide (Civelek et al. 2009). The European entomofauna contains 980 agromyzid species (Černý & Bächl 2020), of which 20.9% (190 species) are distributed in Bulgaria (Hubenov 2021). However, the distribution data for many agromyzids and their host plants are limited in the country. This is probably because many of the available literature records date from the 50s of the last century. The Agromyzidae are best known as leaf-miners (75% of the known species) for the feeding habits of their larvae, but some species can feed inside other plant parts and cause serious damage to various agricultural plants (Spencer 1973).

Himalayan balsam, *Impatiens glandulifera* Royale (Balsaminaceae) is an annual weed, which is invasive in Europe (Adamowski 2008), including to Bulgaria (Petrova et al. 2020). It often forms monotypic stands along the river banks and water flow. Due to its tall stature and high rate of reproduction, it can dominate the local vegetation in a short time, thereby it prevents establishment of the native plants. Concerning the prevent the spread of this highly aggressive species, constant monitoring of part its populations in the country has been done for the last three years, which also includes observations for insect pests.

Material and Methods

The study was carry out in four sample plots of *Impatiens glandulifera*, during the period September-October 2021. They are located on the territory of two mountains in Sofia region.

Plana Mt., north of Dolni Okol Vill. (42°29'40.51"N 23°29'12.81"E, 08.09.2021, 1066 m a.s.l. (leaf mines) and „Dyavolski most” area (along Vedena River, 42°33'36.85"N 23°25'21.69"E, 10.09.2021, 650 m a.s.l. (leaf mines).

Lozenska Mt., „Sipei” area (along Iskar River, 42°34'2.076"N 23°25'48.594"E, 15.09.2021, 655 m a.s.l. (leaf mines), in the land of Kokalyane Vill. (42°34'44.555"N 23°25'34.075"E, 21.09.2021, 650 m a.s.l. (leaf mines).

The mines of *Phytoliriomyza melampyga* (Loew, 1869) were identified on the leaves of Himalayan balsam by Spencer (1972) and Winkler et al. (2010). The larva of this agromyzid species forms a characteristic feeding pattern on leaves of *Impatiens* spp. The mine is shown in detail on Fig.1. The photograph was taken in laboratory condition with a Nikon D750 camera mounted on StackShot Automated Macro Rail plus a Nikon AF-S VR Micro-NIKKOR 105 mm Lens.

Results and Discussion

The leaf mines, caused by larvae feeding of *Phytoliriomyza melampyga* were established in each localities of Himalayan balsam. As a result, a high percentage of infected plants was found – over 50%, with one exception – „Dyavolski most” area, where it is low (up to 10%). *P. melampyga* (= *Liriomyza impatientis* (Brischke, 1880)) is a holarctic species, which is widespread in Europe (Černý & Roháče 2020). So far in Bulgaria, only one locality of the fly is known – close to Rila Monastery in Rila Mt. (Buhr 1941). The identification of the species by Buhr is based on old mines on the leaves of *Impatiens noli-tangere* L. The above records are the first from the Lozenska and Plana Mts., and second scientific reported for the species distribution in Bulgaria.

There is no other known agromyzid on the genus *Impatiens* in Europe (Silfverberg, 2004). As for its outcome, it seems indisputable that the mines on the leaves of *I. glandulifera* were made by *P. melampyga*. This fly is very common, especially on the two invasive neophytes *I. glandulifera* (Silfverberg 2004; Buszko 2015) and small balsam *I. parviflora* DC (Csiszar & Bartha 2008). The European native species *Impatiens noli-tangere* is also well known host of the leaf-miner fly (Spencer 1972; Dreger 2010). In this case, *Phytoliriomyza melampyga* was found for the first time on introduced plant (*I. glandulifera*) and apparently this adaptation was caused by the rise of the Himalayan balsam's frequency of distribution in the country over the past years.

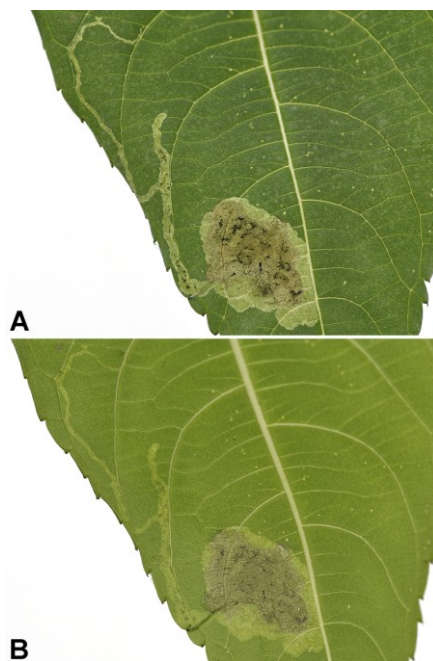


Fig. 1. Fully developed mine of *Phytoliriomyza melampyga* on a leaf of *Impatiens glandulifera*; A – dorsal, B – ventral side.

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