

INVASIVE DENDROPHILOUS AGROMYZIDAE SPECIES IN THE FAUNA OF BELARUS

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Introduction. Biological invasions have become a global problem that poses a major threat to biodiversity. The number of non-native species is increasing mainly due to climate change, intensification of trade and expansion of transportation networks.

Agromyzidae (Insecta: Diptera) – abundant and diverse family of mining flies, that contains species, causing significant economic harm by damaging cultivated plants. Larvae of the majority of agromyzids are leaf-miners (Spencer, 1973), feeding within leaf tissues.

Materials and methods. The list of alien dendrophilous Agromyzidae species and phenological information on them are based on own studies; data available from published sources and open internet-databases on mining arthropods has also been used.

Results. Four invasive Agromyzidae species, were revealed during 2017–2020 field investigations. These species were developed in the pre-imaginal phase within leaf tissues of shrubs and trees, including valuable ornamental plant species.

Aulagromyza caraganae (Rohdendorf-Holmanová, 1959) – monophagous on *Caragana arborescens* Lam. (Ellis, 2021). Whitish were mines found on lower or upper (less frequently) leaf surface. If the mine is lower-surface, the upper surface of the leaf blade turns yellow; pupation takes place inside the mine. In Belarus, larvae were found from June to the end of August. The life cycle includes at least two overlapping generations per year.

The species is widespread in Europe, including the countries bordering to Belarus – Poland and Lithuania (Pape & Beuk, 2014). According to our data in Belarus, the species is abundant and presents in all regions of the country.

Amauromyza obscura (Rohdendorf-Holmanová, 1959) – monophagous on *Caragana* Fabr. (*C. arborescens*, *Caragana frutex* (L.) K. Koch) (Ellis, 2021). The species was recorded previously in European countries bordering to Belarus: Lithuania, Poland, Ukraine (Pape & Beuk, 2014). The first record of the species in Belarus was made in 2020 (Volosach, 2020): *A. obscura* was found on *C. frutex* in Vitebsk, Minsk, Bobruisk, and on *C. arborescens* – in Bobruisk and Brest (Volosach, 2020). Mines are upper-surface, starting with a short narrow corridor and turning into a wide blotch. Frass in dark granules. According to our observations, typically several mines were located on a single leaf blade. Pupation occurs within the mine. According to our data, the life cycle of *A. obscura* includes several overlapping generations during the season.

According to the results of the study, it can be stated that *A. obscura* is locally common and abundant in some regions of the country.

Liriomyza amoena (Meigen, 1830) – monophagous on elders (*Sambucus* spp.) (Ellis, 2021). The species is widely spread in Europe (Ellis, 2021). Mines are located on upper leaf surface, at first they narrow, then they widen into irregular blotch with conspicuous secondary feeding lines and dark frass. Pupation takes place outside the mine. According to W.N. Ellis (Ellis, 2021), larvae can be found from June to September (data for Europe).

L. amoena, presumably, can be found throughout the country in low abundance. Phenology of the species in Belarus is unknown.

Agromyza spiraeoidearum Hering, 1954 – narrowly oligophagous species, mining meadowsweets (*Spiraea* L.) and buck's-beard (*Aruncus dioicus* (Walter) Fernald). *A. dioicus* is a Central European species with several growing sites in Belarus: within Kopyl and Novogrudok Uplands. Therefore, the status of *A. spiraeoidearum* (native/invasive) is uncertain and requires further study.

Mines of *A. spiraeoidearum* are upper-sided, often quite large: a single mine can contain multiple larvae. The mine starts as a relatively narrow corridor and gradually widens into a big spot; mine is light-colored, frass in scattered irregular granules, larvae pupate outside the mine.

The species is widespread in the country, common and usually numerous (Volosach & Buga, 2019).

Conclusion. According to our investigation, there are four alien dendrophilous Agromyzidae species were found in the fauna of Belarus: *Aulagromyza caraganae* Rohdendorf-Holmanová (1959), *Amauromyza obscura* (Rohdendorf-Holmanová, 1959), *Liriomyza amoena* (Meigen, 1830), *Agromyza spiraeoidearum* Hering, 1954 (the status of the last species requires further study). *A. caraganae*, *A. obscura* (Rohdendorf-Holmanová, 1959), and *A. spiraeoidearum* cause damage to ornamental plants in green areas.

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