

# Diversity and Distribution of Leaf Mining Insects on Birches (*Betula* spp.) in Siberia

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**Abstract**—The diversity and distribution of leaf mining insects developing on birches (*Betula* spp.) in Siberia were reviewed based on published records and our observations. Analysis of the literature revealed 52 species of leaf miners recorded as feeding on different *Betula* species in Siberia. Among them, three species were listed under different names and six species were erroneously recorded as birch consumers. Thus, the revised list of birch leaf miners contains 44 species. Five moth and four sawfly species are mentioned in the literature as pests of *Betula*. Four sawflies are known to be invasive in North America. Our collections comprised 25 species, including the micro-moth *Stigmella continuella* (Lepidoptera, Nepticulidae), a new species for Siberia found in Novosibirsk. Immature stages of 15 species were identified using DNA barcoding. Twenty species were recorded from several regions of Siberia for the first time. The dominant group is Lepidoptera (31 species), followed by Coleoptera (7), Hymenoptera (5), and Diptera (1). Two-thirds of all the known leaf miners develop exclusively on birches; the remaining species also colonize alders (*Alnus*, Betulaceae), some Rosaceae, Salicaceae, and Ulmaceae. In our observations, the majority of insects (96%) developed on *B. pendula*. About half of them were also observed on the East Asian birches *B. dahurica*, *B. divaricata*, *B. costata*, *B. ermanii*, and *B. gmelinii*; five species were found on the North American birches *B. occidentalis* and *B. papyrifera*. All the leaf mining species listed in our paper for Siberia also occur in Europe. The similarity between the miner faunas of these regions is discussed and it is warned about possible errors in diagnostics of the Siberian species using the keys and catalogues for the European fauna. The importance of DNA barcoding in the study of the local insect faunas of poorly explored regions is also emphasized.

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