

***Cameraria ohridella* spatial dynamics and invasion genetics**

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Although many organisms are capable of spreading by their own within a new area, biological invasions are associated with human activity, and long- distance dispersal events of anthropogenic origin are susceptible to increase the rate of spread. In the invaded area, the new arriving population is subjected to a founder effect followed by a rapid expansion. It results in a loss of genetic diversity with regard to the original population.

The horse-chestnut leaf miner, *Cameraria ohridella* Deschka & Dimič (Lepidoptera: Gracillariidae) is illustrative of this process. This moth was first discovered in Macedonia near the Ohrid lake in the early 1980s and rapidly spread to most European countries. Its main host tree is the horse-chestnut *Aesculus hippocastanum* which originates from the Balkans, but maples, *Acer pseudoplatanus* and *A. platanoides* can occasionally be used as host. In all regions where the moth is present, it causes aesthetic damage to horse chestnuts which are widely planted as ornamentals in most of Europe, especially within urban areas. Using large scale data, several invasion models were compared and showed that the best model was a stratified dispersal incorporating the effect of human population density. In parallel, the genetic variability of *C. ohridella* populations was investigated in order to trace the geographical origin of the moth in Europe. Mitochondrial sequences were analyzed to test the hypothesis that *C. ohridella* comes from the Balkans. The moth populations sampled in the parks invaded across Europe showed a severe decrease in genetic diversity compared to the moth populations sampled in the natural stands of horse-chestnut in the Balkan mountains. These results suggest that the populations of *C. ohridella* nowadays present in Western, Central and Northern Europe may indeed originate from the Balkans.