

Horse Chestnut Leaf Miner

(Cameraria ohridella)

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Introduction

The horse chestnut leaf miner (*Cameraria ohridella*) is a moth (Figure 1) of the lepidopteran family *Gracillariidae*. Its origins are unknown (probably Asia), and was first reported in Europe in 1985. The moth grows up to 5 mm long and has bright brown forewings with thin black and white stripes. Its larvae are leaf miners on the common horse chestnut (*Aesculus hippocastanum*), causing significant aesthetic damage to the tree.



Figure 1: Leaf miner moth

Life Cycle

The larva tunnels into the leaves of the tree, causing physical damage to leaf tissue and stunting of future growth. Infected leaves are covered in small brown patches which spread rapidly across the entire tree, giving

an autumnal appearance (these patches are similar to damage caused by the fungus *Guignardia aesculi*, but can be distinguished by their more regular size and shape). Eventually the leaves die and fall prematurely; when new ones grow they are again infected. This cycle can repeat itself several times in one season. The moth is able to live at temperatures as low as -23 °C, although it thrives in warmer climates, where it can achieve as many as five generations a year. The hotter and drier the climate, the quicker the lifecycle, and consequently the higher number of generations. Adult moths appear from April onwards. They emerge in the early morning and fly to the tree trunks where they mate. From May until August the females lay their eggs along or near the lateral veins of the leaves on the upper epidermis. A female can produce on average 20-40 eggs, which hatch after 2-3 weeks. Larval development takes up to 4 weeks to complete. During this time they feed on the inside of the leaves but leave the upper and lower epidermis intact. Pupae develop in a silken cocoon for 2 weeks before they are fully developed however, the over-wintering generation can remain at this stage for 6 or 7 months.

Symptoms

Larvae of *C. ohridella* mine within the leaves of horse chestnut (Figures 2 and 3). Up to 700 leaf mines have been recorded on a single leaf under favorable conditions. Severely damaged leaves shrivel and turn brown by late summer and fall early, well before normal leaf fall in the autumn.



Figure 2: Horse chestnut leaf miner symptoms

The spread and establishment of *C. ohridella* is of particular concern because once established, the moth appears always to maintain exceptionally high rates of infestation without any evidence of decline. In European towns and cities there has been no decrease in populations even after many years, and severe damage to horse chestnuts has occurred on an annual basis, greatly impairing the visual appearance of the trees. There is no evidence from Europe that trees have died or shown a progressive decline in health as a direct consequence of attack by *C.ohridella*. However, it is possible that differences in climate or interactions with other pests and diseases might lead to greater impact on horse chestnut in Great Britain.



Figure 3: Horse chestnut leaf miner symptoms (Close-up)

Control

Check for the presence of this pest. The leaf should be held up to the light. If it is a horse chestnut leaf miner burrow, it will be possible to identify a larva, chrysalis, or larval frass within the leaf.

Damage can be reduced by removing fallen leaves during the autumn and winter and either composting them thoroughly, to destroy the over-wintering pupae, or if the leaves are collected into smaller heaps, by covering them with a layer of soil or other plant material to prevent adult emergence in the following spring. Burning of infected leaves is also recommended. Its natural enemies are parasitic wasps, but there are few species present in Europe. Consequently, natural control measures based on bio-control are limited.

Systemic insecticides are used on growing plants and kill leaf miners mainly by direct contact. They are formulated as water based sprays or aerosols, microcapsule trunk injections or basal root drenches which are applied early in the growing season (April). Due to the nonpersistent nature of these chemicals reinfestation may soon occur and repeat treatments during summer may be necessary.

Soil drench around the tree base with Admire in February/March or October/November for growing season long control.