

Woody Ornamental IPM

Birch Leafminer

The Birch leafminer, *Fenusa pusilla* (Klug), native to Europe and well established in N.E. United States, is a small sawfly that feeds on the tissue between the upper and lower surfaces of birch leaves. The host plant may show no symptoms of decline for several years, however, repeated leaf loss year after year, could be fatal to the tree.

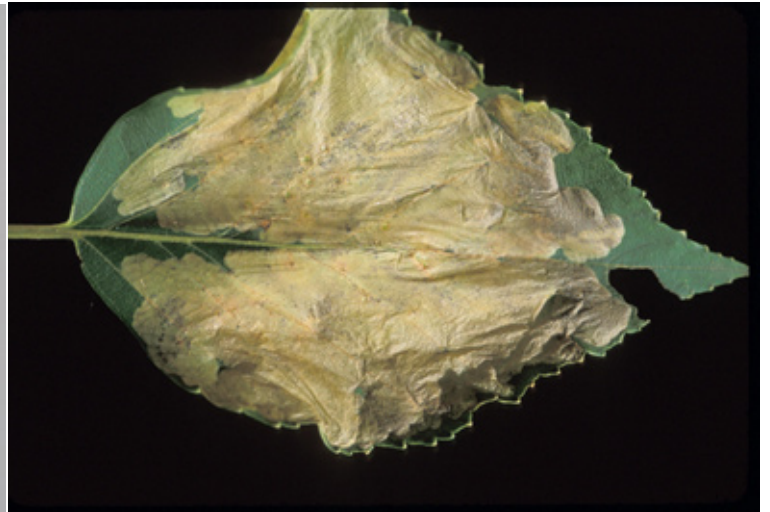


Plants Attacked

Birch leafminer causes damage to the Gray Birch (*Betula populifolia*), European White Birch (*Betula pendula*), Erman Birch (*Betula ermanii*), Asian White Birch (*Betula platyphylla* variety *japonica*), Monarch Birch (*Betula maximowicziana*) and Paper Birch (*Betula papyrifera*).



Young mines on birch leaves in late May



Individual mines coalesce to form a large blotch

Insect Identification

The small, white and slightly flattened larvae of the birch leafminer live within the birch leaves. They can be easily seen when the leaves are held up to the light. The adult is a black fly-like insect about 3/16" inch long.

Damage Symptoms

Damage to the leaves of the host plant initially consists of small individual leaf mines; however, as these overlap forming larger blotches, wilting and gradual leaf death occurs. Complete defoliation of the host plant is possible, with the foliage at the top of the tree turning brown first. Early season defoliation, when the leaves are becoming fully expanded, is particularly damaging because the tree is growing rapidly with maximum energy demands and little energy reserves. Severe defoliation weakens the tree and increases its susceptibility to invasion by secondary insect and disease pests.

Life History

Winter	The larvae over-winter encased in a cocoon 1-2 inches beneath the soil around the host plant.
Spring	In southwest Pennsylvania, the adults emerge and mate in early to mid May. After mating, the female inserts her eggs into soft newly expanding foliage. The eggs hatch into larvae after seven to ten days. The larvae commence feeding, producing a blotch mine that increases in size as it coalesces with others. The larvae feed for 2 - 3 weeks, until reaching maturity, when they cut holes in the leaf and fall to the ground.
Summer	In Pennsylvania, there are two generations of birch leafminers each year. The second generation adults emerge in mid to late June in southwest Pennsylvania. Damage caused by the second generation during the same growing season has a less dramatic effect on the tree.

Management Options

Cultural	Prevention is key since it is difficult to control the leafminer once inside the leaf. Species reported to be resistant and rarely affected by birch leafminer include Whitebarked Himalayan Birch (<i>Betula jacquemontii</i>), Dahurian Birch (<i>Betula davurica</i>), River Birch (<i>Betula nigra</i>) Schmidt Birch (<i>Betula schmidtii</i>), Black Birch (<i>Betula lenta</i>), Yellow Birch (<i>Betula alleghaniensis</i>) and Japanese Cherry Birch (<i>Betula grossa</i>). Keeping the soil in good condition with the use of organic matter and properly watering during times of drought will reduce the host plants susceptibility to secondary pests.
Mechanical	Handpicking and destroying the infested leaves is effective, but time consuming.
Chemical	Systemic insecticides for the control of larvae can be applied to the foliage by soil injection or injected into the tree..

Authored by: Katherine Mazzey, Penn State Extension Program Assistant

Michael Masiuk, Extension Educator, Penn State University - Allegheny County

Images by: Michael Masiuk

Sources

Ascerno, M. E. , Hahn, J. D. (1999). Birch Leafminers. University of Minnesota Extension Service. www.extension.umn.edu/distribution/horticulture/DG6134.html.

Cornell Cooperative Extension (2001). Birch Leaf Miner. www.cce.cornell.edu/suffolk/grownet/tree-insect/birchlif.html.

Hoch, W.A., McCown, B.H., Zeldin, E.L. (2000). Resistance to the Birch Leafminer *Fenusa pusilla* (Hymenoptera:Tenthredinidae) within the Genus *Betula*. Department of Horticulture, University of Wisconsin-Madison. *Journal of Economic Entomology*:Vol.93, No.6, pp.1810-1813.

Hoover, G.A. (2003). Birch Leafminer. Department of Entomology. Penn State. www.ento.psu.edu/extension/factsheets/birchLeafminer.htm

Shetlar, D. J. & Chatfield, J. A. (2000). Birch Leafminer. Ohio State University Extension Fact Sheet. www.ohioline.osu.edu/hyg-fact/2000/2035.html