



Birch Leaf Miner *Fenusa pusilla* (Klug)



Fig. 1. Discolored, translucent leaves from birch leafminer (Whitney Cranshaw, Colorado State University www.bugwood.org)

The birch leaf miner is a tiny wasp-like sawfly. Its common name comes from the larval habit of feeding between the upper and lower surfaces of birch leaves. This European insect is well established throughout New York State. Its favorite native food plants are gray and paper birch. It also attacks ornamental birches such as the European white birch and cutleaf varieties. Yellow and black birch are not known to be attacked.

Symptoms and Damage: Partially or completely discolored and translucent leaves (**Fig. 1.**) on birches are signs of damage by the birch leaf miner. Mining or tunneling in the leaf tissues by the larvae produces conspicuous blotches or blisters on the leaves which later turn brown (**Fig. 2.**). Some birches are almost completely browned from top to bottom (**Fig. 3.**) due to the feeding activity of the insect. However, the tops of the trees are often the most seriously affected portions.

There can be up to four generations of the insect in a season depending upon the locality and climatic conditions. The first generation of the insect causes the most damage. Adults begin egg laying in the spring when the leaves start to unfold. At this time of the year, all leaf tissue is soft and favorable for larval development. Additional damage may be caused by the second generation, but attack by succeeding generations during the same season is of little importance. These subsequent generations may affect sprout growth, where foliage is soft and new. Old foliage is not attractive to sawflies during oviposition.

Normally, a healthy tree can lose part or nearly the entire current crop of leaves without being seriously injured. Repeated leaf losses year after year may kill or seriously weaken the tree, risking attack

by fungi or by serious pests such as the bronze birch borer. This borer will kill birch trees.

Description: The adult birch leaf miner is a small, black sawfly. It is about 1/8 inch long, and has a wingspread of about 1/4 inch. The larvae are small, whitish, and slightly flattened and when full grown are nearly 1/4 inch in length. The larvae and black fecal matter are easily seen in the mines when the infested leaves are held up to the light. Young larvae have four characteristic black marks on the underside of the body. These marks disappear when full growth is attained.

Life Cycle: Adult sawflies emerge from the soil during mid-May and fly to birch trees. The adults are very short-lived and are rarely seen except during periods of egg laying at which time they fly and crawl over the leaf surfaces. Females begin egg laying as soon as the leaves unfold from the bud. The eggs are inserted singly inside the soft, newly expanding leaves. After a week or ten days the eggs hatch and the tiny larvae begin to feed on the tissue between the upper and lower leaf surfaces. As the larvae feed, the individual blotches or blisters become larger. The mines are often united to form a single large area in which the larvae then live together. After a period of one to two weeks the larvae mature and stop feeding. They chew through the leaves and drop to the ground. There they work their way into the soil to spend the winter, pupate, and in the spring emerge as adult sawflies. A generation is completed in five or six weeks. Since the life cycle from egg to adult is short, there may be two, three, or more generations each year, depending upon location and favorable weather conditions. The second and



Fig. 2. Inner leaf tissue may be completely destroyed (Note the appearance of the black frass in mines & larva in leaf on gray birch). (Whitney Cranshaw, Colorado State University www.bugwood.org)

succeeding generations concentrate on the tops of trees, on terminal or new leaves, and on sprout growth where the leaves are tender. At the end of the season, the last generation of larvae remains in hibernation in a cell in the soil until the following spring.

Pest Management Practices: Do not plant birches in known high hazard areas subject to attack by this insect. For trees already established, keep the soil in good condition by the addition of organic matter and fertilizer. Keep the trees properly watered during prolonged periods of dry weather.

Control of the first generation is most important. Exotic parasites have been established. Some species of birch are resistant.

If the leafminer is a problem, apply two sprays: mid-May (190–290 GDD) and mid-June (530–700 GDD). Apply acephate, carbaryl, lambda-cyhalothrin, or permethrin.

GDD = growing degree days. For information on utilizing GDD contact Cornell Cooperative Extension – Suffolk County or visit the CCE web site <http://ccesuffolk.org/assets/Horticulture-Leaflets/Using-Growing-Degree-Days-for-Insect-Pest-Management.pdf>

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Pesticide and management recommendations obtained from: *Part I Guide to Pest Management Around the Home, Cultural Methods* and *Part II -- Pest Management Around the Home, 2009-2010 Pesticide Guidelines*, Miscellaneous Bulletins S74-I and S74II, Cornell Cooperative Extension Publications. Contact our office for information on ordering copies.

The Pesticide Management Education Program (PMEP), in cooperation with the New York State Department of Environmental Conservation (NYSDEC), maintains a web site with a searchable database for pesticide products currently registered in New York State. Individuals who have Internet access can locate currently registered products containing the active ingredients suggested above at <http://pims.psur.cornell.edu/index.php> (NYS PIMS).

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