

Birch Leaf Miner

by Ed Holsten, Research Entomologist, USDA Forest Service, Alaska Region, State and Private Forestry.

Additional information on this insect can be obtained from your local USDA Alaska Cooperative Extension office, Alaska State Forestry office, or from:

Forest Health Protection
State and Private Forestry
USDA Forest Service
3301 "C" Street, Suite 522
Anchorage, Alaska 99503
Phone: (907) 743-9455

Forest Health Protection
State and Private Forestry
USDA Forest Service
2770 Sherwood Lane, Suite 2A
Juneau, Alaska 99801-8545
Phone: (907) 586-8883

or:

www.fs.fed.us/r10/spf/fhp/fhpr10.htm

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, SW, Washington, DC 20250-9410, or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

Birch Leaf Miner



The birch leaf miner (*Fenusa pusilla* (Lepelletier)) (Hymenoptera: Tenthredinidae) was first recorded in North America in Connecticut in 1923. It is of European origin. It now occurs from Newfoundland to Maryland, west to Ontario and Alberta, Minnesota and Iowa; also in Washington and Oregon and now in south-central Alaska. It was first recorded from south-central Alaska in 1996 on paper birch. It was probably introduced into south-central Alaska on imported birch used as ornamental out-plantings and has now spread to native birch. Intense outbreaks of the birch leaf miner in the Anchorage Bowl, and to some degree in the Mat-Su Valley, have been a yearly occurrence. Paper birch, in urban settings, is hardest hit (Cover photo); birch in forest settings are rarely affected. To date, the birch leaf miner has not been observed in interior Alaska. The purpose of this brochure is to describe the life history and life stages of the birch leaf miner and to present the homeowner with some guidelines for minimizing damage to ornamental and native birch.

Life History

In Alaska, winter is spent in the pre-pupal stage (brownish cocoons) in the soil beneath defoliated birch. Pupation occurs in the spring and the adult sawflies emerge in early spring depending upon temperature and location. Eggs are deposited singly in slits cut in the central area of young leaves. Larvae feed on the tissues between the leaf surfaces. Young larvae feed singly. As the individual larval mines increase



Figure 1. Brown blotches caused by leaf miner feeding.

in size, they coalesce and form large, hollowed-out brown areas in the leaf (Figure 1). Mature larvae chew their way out of the leaf and drop to the ground, enter the litter layer, form small earthen cells, 2.5 to 5 cm below the soil surface, in which they spin papery, brown cocoons. There are three or four generations per year in the southern part of the range of this leaf miner. The number of generations per year in Alaska is not known.

Description

Mature larvae are somewhat flattened, yellowish white, and are about 6 mm long (Figure 2). Adults are black and about 3 mm long. Males are more common than females.

Damage Caused

The most obvious sign of infestation is severe browning and distortion of foliage beginning in early July. Damage appears to be more serious on open-grown ornamental birch than on birch in forest stands. Heavily defoliated trees may be more susceptible to attack by other insects and pathogens. Tree mortality as a result of birch leaf miner defoliation has not been observed in Alaska but has been observed in the Northeastern States.

Guidelines for Reducing Damage

It is important to insure that birch growing in urban settings have the best possible growing conditions. Care should be taken to avoid injuring the roots, either mechanically or through soil compaction. Soil should neither be placed on top of nor removed from the area beneath the crown of the tree. In order to avoid moisture stress, adequate water should be provided to



Figure 2. Leaf miner larvae and feeding blotches.

the trees throughout the growing season. Spring fertilization also helps to promote tree vigor and to minimize the effect that defoliators such as leaf miners might have on a tree. The USDA Cooperative Extension Service should be consulted for specific information on the type and amount of fertilizer to be applied.

Alternatives: When leaf miners have been present, several alternatives are available for their control:

When leaf miner populations are low, some limited defoliation may occur but most trees will minimally be affected. The raking and disposal of leaves and litter beneath the defoliated tree in the fall will remove many of the overwintering pre-pupae and help minimize leaf miner defoliation the following year.

Early chemical control can greatly reduce subsequent damage. Prevention of egg laying at bud break may be accomplished using systemic insecticides. Systemic insecticides are longer lasting, but take longer to become effective and require extreme caution in their application. These systemics can be applied either to the foliage or to the soil to be absorbed through the roots and transported later to the foliage. Check with your local Cooperative Extension Service office for insecticides that are currently registered birch leaf miner control.

Contact the Alaska Cooperative Extension Service for recommended insecticides.

CAUTION: Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or other wildlife—if they are not handled or applied properly. Use all pesticides selectively and carefully. Since approved uses of a pesticide may change frequently, it is important to check the label for current approved and legal use. Follow recommended practices for the disposal of surplus pesticides and pesticide containers. Mention of a pesticide in this publication does not constitute a recommendation for use by the USDA, nor does it imply registration of a product under Federal Insecticide, Fungicide, and Rodenticide Act, as amended. Mention of a proprietary product does not constitute an endorsement by the USDA.

Photography Credits

Figures: Bugwood, www.bugwood.org, The University of Georgia Cooperative Extension Service, Tifton, GA.