

Pine disorder: European pine sawfly

P. J. PELLITTERI, D. L. MAHR, and D. J. HALL

Early season defoliation of pines in southern Wisconsin may be attributed to European pine sawfly, *Neodiprion sertifer*. Native to Europe, the insect was introduced into the United States in 1925, and its first recorded occurrence in Wisconsin was from Walworth County in 1972. The most heavily infested area has been in southeastern Wisconsin. Favored host species of pine include Scotch, red, jack, mugho and Austrian, although other varieties will also be attacked.



Colony of European pine sawfly larvae in early June.

Symptoms and effects

In early to mid-May, the first indication of an infestation is often an easily observed yellowing of needle clusters which have been skeletonized by the young larvae. These needles will eventually drop from the tree. Older larvae consume entire needles, resulting in noticeable defoliation by mid-June. Larvae also feed on the bark of young shoots, which can result in shoot death or deformation.

Because the larvae feed early in the season, only the old foliage from the previous years is consumed. The new needles develop normally, leaving the tree with a tufted appearance and sparse foliage. Several successive years of moderate to intensive defoliation result in severely decreased tree growth. Also, such trees become stressed and more susceptible to attack by diseases and other insects.



European pine sawfly larvae have consumed the previous year's needles, leaving new growth intact.

Life cycle

Eggs hatch in late April to early May in southern Wisconsin, and the larvae feed in colonies which range from 20 to 200 individuals. They feed only on the previous year's needles. When one branch is defoliated the entire colony moves to a new branch and feeds on that foliage. Similarly, if an entire tree is defoliated before the larvae become full grown, they will seek a neighboring pine and continue their feeding.

Fullgrown larvae are about 1 inch long and resemble caterpillars. The head and front three pairs of legs are black. The rest of the body is a grayish-green color with a lighter stripe down the back, and two light stripes and one dark green or black stripe down each side. In addition to the three pairs of true legs behind the head, the larvae have a pair of accessory "prolegs" on each of the remaining body segments. This characteristic differentiates them from true caterpillars which have at the most four pairs of true prolegs in the center of the body and a single pair at the very hind end.

Larvae finish feeding in mid-June and then drop to the ground and spin brown cocoons in the leaf litter at the base of the tree. Pupation occurs within these cocoons in mid-August with adults emerging in September and October. These are drab brown insects about 1/2 to 3/4 inch long, which look similar to flies. Although closely related to bees and wasps, they cannot sting. The adults mate soon after emergence. Females lay their

eggs by inserting six to eight eggs in each of 10–12 needles in a cluster. This is the overwintering stage. There is one generation each year.

Control

Natural and biological

Birds, rodents, and beneficial insects feed on the larvae and cocoons. However, these natural controls provide only minimal to moderate control. Entomologists with the University of Wisconsin, the Wisconsin Department of Natural Resources, and the United States Forest Service have been working on establishing exotic natural enemies from the sawfly's native Europe. Thus far, a small parasitic wasp which attacks the larval and cocoon stages, and a virus disease specific to

European pine sawfly larvae have been successfully introduced and established in Wisconsin. The degree of success of these efforts will not be realized fully for several years. The virus disease kills and results in decomposition of the larvae. Diseased larvae are inactive and, once dead, often hang straight down from the branches. These infected larvae turn into little brown sacs of virus particles, which break open and infest other larvae in future seasons. Once a colony becomes infested, most of those larvae succumb to the disease.

Cultural

If the colonies are spotted soon after the larvae hatch from the eggs, they can usually be pruned out of the tree or otherwise physically removed.

Chemical

Insecticides available to the homeowner include malathion and Orthene. Malathion will not be effective if the temperature at time of spraying is below 55°F. In light infestations with a small number of colonies, you can achieve effective control by spot spraying just the colonies. This helps preserve the beneficial insects elsewhere in the tree. Apply sprays at the first sign of larval activity in late April or early May. The sprays are most effective against young larvae, and early application prevents more extensive damage from larger larvae. Soapy water sprays have some effect on small sawfly larvae.

Although sawfly larvae resemble caterpillars, they are not. Therefore, they are not controlled by the bacterial insecticide *Bacillus thuringiensis* (Dipel, Thuricide, Bactur, Sok-Bt), which is exclusively for caterpillar control.



Typical hanging pose of a virus-killed sawfly larva.

References to products in this publication are for your convenience and are not an endorsement or criticism of one product over other similar products. You are responsible for using chemicals according to the manufacturer's current label directions. Follow directions exactly to protect the environment and people from chemical exposure.

UW
Extension

©1997 University of Wisconsin-System Board of Regents and University of Wisconsin-Extension, Cooperative Extension

Authors: P.J. Pellitteri is distinguished outreach specialist of entomology and D.L. Mahr is professor of entomology, College of Agricultural and Life Sciences, University of Wisconsin-Madison and University of Wisconsin-Extension, Cooperative Extension. D.J. Hall is forest entomologist, Forest Pest Control Unit, Wisconsin Department of Natural Resources. Produced by Cooperative Extension Publications, University of Wisconsin-Extension.

University of Wisconsin-Extension, Cooperative Extension, in cooperation with the U.S. Department of Agriculture and Wisconsin counties, publishes this information to further the purpose of the May 8 and June 30, 1914 Acts of Congress; and provides equal opportunities and affirmative action in employment and programming. If you need this material in an alternative format, contact the Office of Equal Opportunity and Diversity Programs or call Cooperative Extension Publications at 608-262-8076.

This publication is available from your Wisconsin county Extension office or from Cooperative Extension Publications. To order, call toll free 877-WIS-PUBS (947-7827) or visit ecommerce.uwex.edu.

A3180 Pine Disorder: European Pine Sawfly

SR-09-97