



Pine Sawflies



Figure 1. An adult female of the introduced pine sawfly. (John H. Ghent, USDA Forest Service, www.Bugwood.org)



Figure 2. European pine sawfly eggs deposited in slits in needles. Note the newly hatched larva.

In New York State six species of sawflies are common pests of pines. The larvae are caterpillar-like with three pairs of thoracic legs and eight pairs of prolegs on the abdomen. They usually feed in groups and strip one branch of needles before they move on to another branch. They prefer old needles but may eat new needles later in the summer or when food is scarce. The feeding pattern varies with the species. When defoliation is severe enough the trees die.

When mature the larvae spin tough capsule-like cocoons on the ground or in the litter, sometimes on the tree. The wasp-like adults (**Figure 1.**) emerge from these and lay eggs singly in slits cut in the needles (**Figure 2.**) These slits are cut by a saw-like ovipositor used to deposit the eggs, hence the common name sawflies.

THE REDHEADED PINE SAWFLY (*Neodiprion lecontei* Fitch):

This is one of the most widespread and destructive of the native species attacking pine. It is often abundant in northern New York State on red pine. Pines having needles in clusters of two or three are preferred. Host plants are red, pitch, Scotch, Austrian, mugho, jack, loblolly, slash, Japanese red and Virginia pines. Occasionally Eastern white pine may be attacked.

Newly hatched larvae are whitish, faintly marked and with brownish heads. After molting the bodies become yellowish white with six rows of conspicuous black spots and the head becomes reddish (**Figure 3.**) They become full grown in 25 to 31 days and average 7/8 to 1 inch in length. The life history is complicated, as there may be more than one generation a year. Sometimes prepupal larvae remain dormant through one or two years. Broods of larvae may be found feeding from spring until late fall.

WHITE PINE SAWFLY (*Neodiprion pinetum* Norton): The life cycle and habits are similar to the redheaded pine sawfly. The head is always black. The body is yellowish with four longitudinal rows of black spots (**Figure 4.**) White pine is the favorite host plant but it occasionally attacks red, pitch, mugho and other short-leaf pines.

INTRODUCED PINE SAWFLY (*Diprion similis* Hartig): The larva of this European insect prefers white pine and other five needled pines as food. Two-needled pines such as Scotch and mugho may also be attacked. When full grown the larva is about one inch long with a black head and greenish-yellow body with a double brown or blackish stripe the entire length of the back (**Figure 5.**) The sides of the body are dark brown, mottled with yellow and black.

Like Leconte's sawfly the seasonal history of this sawfly can be rather complicated. Adults may emerge from April to September, hence larvae may be found from May to September. Each brood may complete their feeding period in 16 to 32 days.

THE RED PINE SAWFLY (*Neodiprion nanulus nanulus* Schedl): The larva prefers red pine but it will feed on jack, mugho and Japanese red pines. At times older larvae feed on white pine that is growing in close association with red pine.



Figure 3. Redheaded pine sawfly larvae. Note how the insect feeds in a cluster or colony typical of most conifer sawflies. (Clemson University - USDA Cooperative Extension Slide Series, , www.Bugwood.org)



Figure 4. White pine sawfly larva. (James B. Hanson, USDA Forest Service, www.Bugwood.org)

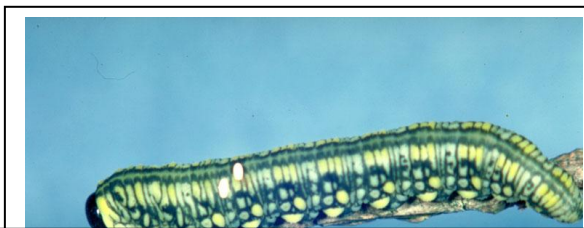


Figure 6. Red pine sawfly larvae. (USDA Forest Service - Northeastern Area Archive, USDA Forest Service, www.Bugwood.org)

When full grown the larva is about 3/4 inch in length and the body may be grayish green to black on the back and greenish-white on the underside (**Figure 6.**) The mid-dorsal stripe is light green, bounded by a lighter stripe above and below on each side and it extends the length of the back. A blackish stripe is present at the base of the legs. The thoracic legs are also black with whitish rings. Prior to pupation the head, usually black, may become yellowish brown and the four longitudinal stripes become more distinctly blackish. There is one generation annually. The insect spends the winter as an egg in the needle. The larvae emerge in May and usually complete their growth by June before the current years needle growth is completed. The adults emerge during September and October.

EUROPEAN PINE SAWFLY (*Neodiprion sertifer* Geoffroy): This species has become established in the United States. The species is one of the more serious sawfly defoliators of pine in many sections of New York State. It is a serious defoliator of red and Scotch pines and also attacks mugho, jack, Japanese red, and Swiss Mountain pines. Some feeding occurs on eastern white, Austrian, ponderosa, short leaf and pitch pines, if any of these species grow with favored hosts. Pines of all sizes are attacked.

Since emergence of larvae begins early in the spring before new foliage (needles) are produced, only old needles are consumed. After hatching and until the first molt, the larvae skeletonize the needles where eggs were first laid and then move to other needles. As larvae become older they eat entire needles so that only sheaths are left on twigs. Like other sawflies, the larvae feed gregariously, remaining in colonies throughout their development. When disturbed, they display a characteristic reaction as they raise the front and rear portions of the body, remaining attached to the needles by the prolegs in the center. By the time the new needles on new growth are half developed, the larvae have completed feeding. Thus the tree is never completely bare of foliage. If the food supply is exhausted on one tree, the larvae may crawl to new hosts. The 4 to 6 week larval feeding period usually ends between early June or mid-July, depending on the locality.

Some bark feeding occurs during the last half of the feeding period and may kill a few twigs. Single and repeated defoliation, however, cause losses in height growth. Though extensive mortality is seldom a threat, repeated defoliations weaken trees and may increase susceptibility to attack by secondary insects and disease producing organisms.

The newly hatched larva is about 1/8 inch long with a white head that soon becomes black. When fully grown (**Figure 7.**), the larva is 3/4 to 1 inch long. The body has several longitudinal stripes of varying green shades. The dorsal surface is marked with a narrow line, flanked by a broader dark band on either side. Each side of the body has two very dark bands, separated by a thin, light stripe. The eight pairs of abdominal prolegs and underside of the abdomen are light yellowish green.

The European pine sawfly completes one life cycle per year. It overwinters in the egg as a well-developed embryo in the needles of pine. Hatching to larval stage may extend over a period from mid-April to early May depending on locality and climate.

A PINE SAWFLY (*Gilpinia frutetorum* Fabricius): Introduced from Europe, this species is usually not too abundant. The larvae prefer red and Scotch pines. When full grown the larvae are nearly 1 inch in

length. The head is reddish brown. When the larva molts to the last instar, prior to emerging as an adult, its markings disappear, except for eye spots. The winter is passed in the cocoon stage. The larvae of the first generation may be found feeding from about June to early August, while those of the second generation, depending on locality, may be found from late in July until late in the fall.

MANAGEMENT

Hands pick or prune off and destroy colonies. Most conifer sawflies live in colonies. Some have two annual generations and may appear anytime during the growing season. Parasites and disease organisms help control sawflies. Or spot treat when observed (mid-May through mid-July, 246-1388 GDD for *Diprion* spp. & *Neodiprion* spp.), using acephate, carbaryl, lambda-cyhalothrin, or spinosad. 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>

Pesticide recommendations obtained from: *Part II -- Pest Management Around the Home, 2009-2010 Pesticide Guidelines*. Contact Cornell Cooperative Extension for information on ordering copies.

Text obtained from *Pine Sawfly*, New York State Tree Pest Leaflet F-14 and *European Pine Sawfly*, New York State Tree Pest Leaflet F-26.

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).

This publication contains pesticide recommendations. Changes in pesticide regulations occur constantly and human errors are still possible. Some materials mentioned may no longer be available, and some uses may no longer be legal. All pesticides distributed, sold or applied in New York State must be registered with the New York State Department Of Environmental Conservation (DEC). Questions concerning the legality and/or registration status for pesticide use in New York State should be directed to the appropriate Cornell Cooperative Extension specialist or your regional DEC office. Read the label before applying any pesticide.

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Figure 7. European pine sawfly larvae. *Note larvae are often seen in pairs on needles.* (John D. Keggs, New Jersey Department of Agriculture, www.Bugwood.org)