



White Pine Weevil



Fig. 1. Adult white pine weevils. (Dave Powell, USDA Forest Service, www.Bugwood.org)

The white pine weevil, *Pissodes strobi* (Peck) a snout beetle (**Fig. 1.**), is the most important insect pest of the eastern white pine. This insect is seldom responsible for the death of trees, though seedlings of 2 to 4 feet may be killed if larval feeding extends below the lowest living whorl of the branches. Economic losses are serious in older trees because the vertical terminal leader is killed. As a result, tree growth is stunted and deformed, thus lowering the amount and quality of lumber produced. The dead leader may serve as a point of entry for wood-destroying fungi, such as Red Rot, further lowering lumber values. Weevil injury may account for as much as 40% volume loss in sawlog portions of timber trees.

Norway spruce, Scotch pine and jack pine are readily attacked by the weevil. Pitch pine, red pine and red spruce are occasionally attacked, while Douglas fir and blue and white spruce are rarely infested. Douglas fir has suffered damage in a few localized areas of New York State.

Symptoms: The important external symptoms of attack are confined to the leader and differ depending on the time of the year observations are made.

In the spring when adults are feeding, mating and laying eggs, glistening water-like resin droplets may be observed on the leader for a distance of several inches below the terminal buds. Oozing from the feeding punctures, the resin dries and turns whitish (**Fig. 2**). The new terminal growth of attacked leaders is an abnormal shade of green. As the season progresses, the new terminal growth wilts and assumes a curved form resembling the crook of a shepherd's staff (**Fig. 3**); it dries and turns brown (**Fig. 4**) The bark of the stem below the new growth turns from green to brown as the larvae, feeding under the bark (**Fig. 5**), tunnel downward. By midsummer, in most localities, the needles on the killed portion have turned yellowish to brown. At this time, or shortly after, the new generation of adult beetles exits the terminal. They escape to the outside by chewing BB-shot- sized holes through the bark (**Fig. 6**). These holes, with chip cocoons under the bark, dried resin, withered stem and browned foliage identify the injury as that of the white pine weevil.

Variations of the typical symptoms do occur. If adult feeding on the leader in the spring is very heavy, the leader may be girdled and the terminal buds produce height growth.

If feeding is less severe, shoot elongation occurs but is dwarfed. These aspects of injury may or may not be associated with larval feeding. In some cases, adult emergence holes may be lacking as larvae are drowned by an abundant flow of resin. However, the



Fig. 2. Oozing resin from feeding punctures. Note that some of the resin is starting to turn white. (E. Bradford Walker, Vermont Department of Forests, Parks and Recreation, www.Bugwood.org)

leader may be killed or partially destroyed without killing the entire leader. Scars of callus tissue at puncture sites indicate the latter situation.



Fig. 3. Early stage symptoms of white pine weevil damage. Note the curved “shepherd’s staff” symptom of this Colorado blue spruce leader. (Whitney Cranshaw, Colorado State University, www.Bugwood.org)



Fig. 4. Wilted terminal growth on white pine turning brown. (E. Bradford Walker, Vermont Department of Forests, Parks & Recreation, www.insectimages.org)

Damage: The loss of a leader may result in the crooked appearance of the main stem, or occasionally in a forked tree. This latter condition occurs because one or more lateral branches from the living whorl below the killed portion will grow upward to assume the function of the destroyed leader. Once the vertical position is established, these leaders are again subject to attack by the beetle, which is attracted to the newly exposed leader. Some trees are attacked many times before they have reached merchantable size.

The grain in lumber from weevil damaged trees is usually very crooked as a result of these repeated attacks. The length of the stem destroyed by the weevil varies, depending on how far down the larvae feed. The site of egg laying (last year's terminal growth) and the current year's growth (which never gets a chance to develop) are always destroyed. Frequently 3 and even 5 years' growth is destroyed when larvae feeding extends far enough down the stem.

Description: The adult white pine weevil is about 1/4 inch long. A distinctive tapered head with a slender protruding beak-like snout characterizes the insect. The antennae are located at or just behind the middle of the snout; at its base the eyes are widely separated. The body is covered with tiny reddish-brown and white scales and there is a distinct irregular patch of grayish-white scales near the rear of each wing cover.

The larva is legless, creamy white in color, and slightly longer than the adult weevil. The head of the larva is small and light brown with distinct eye spots. Larvae are found under the bark or in the wood of a weeviled shoot.

The pupae are creamy white with brown eye spots. The abdominal tip is square. As the pupae approach maturity, the beak and legs begin to turn brown and the general color of the adult is assumed. The pupae are about the same length as the adults.

Life Cycle: The white pine weevil has one generation a year. Adult weevils hibernate in the ground litter near the base of host trees. In New York State the weevils usually become active during April - about the time the buds on the white pine began to swell. On leaving the litter, they crawl up or fly to the vertical terminal shoot of the host tree and feed on the inner bark tissue. Egg laying may start as early as mid April in the southern counties of New York State and extend through June in the more northern counties. A single terminal shoot may contain from 20 to over 350 eggs, depending upon the number of females laying eggs. The female may visit more than one tree to deposit her eggs, and any single leader may contain eggs deposited by several female weevils. Resin flows over the bark and eventually fills the chambers containing the eggs. Exposure to the air hardens the resin and it acts as a sealing agent. The eggs hatch in 5 to 10 days.

The larvae feed at the juncture of bark and wood, destroying the cambium and inner bark tissue in their downward progress. As they mature, the larvae tunnel into the wood and pupate in the sponge-like pith. However, some may pupate in shallow cavities chewed out on the exposed surface of the wood; these cavities are covered with the excelsior-like strips of wood removed during the excavation. These are the chip-cocoons.



Fig. 5. Bark removed to expose white pine weevil larvae. Note the damaged cambium and brown frass. (Pennsylvania Department of Conservation and Natural Resources - Forestry Archive, www.Bugwood.org)



Fig. 6. Exit holes chewed by adult weevils in the damaged terminal. (Steven Katovich, USDA Forest Service, www.Bugwood.org)

Larvae in different stages of development may be found in the leaders, as egg laying occurs over a month to two month's time. As a result, emergence may span from June to September.

Management: Natural enemies do not provide control. Cut out and destroy wilted or dead leaders by the end of June.

There are no insecticides registered for use by homeowners to control this insect. The following insecticide formulations are suggested for use by a licensed certified pesticide applicator to control white pine weevil: *bifenthrin (OnyxPro), *diflubenzuron, *gamma-cyhalothrin, or *permethrin. Apply in April, (7-58 GDD).

* = Restricted-use pesticide; may be purchased and used by certified applicators or used by individuals under the direct supervision of certified applicators.

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>

Pesticide recommendations obtained from *2011 PMG for Commercial Production and Maintenance of Trees and Shrubs (TS-11)*. Copies are available from Cornell Cooperative Extension – Suffolk County.

Management recommendations obtained from: *Part I Guide to Pest Management Around the Home, Cultural Methods*, Miscellaneous Bulletin S74-I.

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