

PINE MOTHS

Although there are many species of small moths that infest conifers, two in particular are troublesome to pines in the Midwest: the European pine shoot moth and the Zimmerman pine moth. The larvae of both species inflict damage by boring into the terminal and lateral tips of host trees during their feeding periods. However, the two moths differ significantly in terms of appearance and life cycle, and it is important to recognize and understand these two aspects so that effective control measures can be taken at the proper time.

EUROPEAN PINE SHOOT MOTH

Description

The adult European pine shoot moth is a rusty orange-red moth with irregular, silvery markings on the forewings, plain brown hindwings, and whitish legs. In its mature larval stage, it is about a 3/8-inch long brown caterpillar with a black head.

Life Cycle

The European pine shoot moth overwinters within the buds of pines in its larval stage. In spring, the larvae resume feeding, moving to undamaged buds until they complete their development in late May or early June. Adults emerge two to three weeks later. After mating, eggs are laid either singly or in small clusters on needles, twigs, or buds during the next several weeks. Eggs are flat and, at first, yellow in color, turning reddish-brown as they mature. Only one generation is produced per year. When the eggs hatch, the new larvae immediately begin spinning a protective tent-like web between the needle sheaths and the stems of the current year's growth. The larvae begin mining the base of the needles by boring through the needle sheaths. By mid-summer, the larvae have moved on to feed on new buds and construct new resin-coated webs. At first, the webs appear translucent and glisten, but later they will solidify into yellowish-white masses, which are almost impermeable. By August, their feeding has stopped.

Symptoms

The European pine shoot moth prefers two- and three-needled pines, especially red, Scots, mugo and Austrian, and can be particularly troublesome in nursery or plantation (tree farm) situations. Young trees up to 12" tall are the most severely affected. The most serious damage occurs during the spring feeding. New shoots are often weakened rather than killed, causing growth distortions to trunks and branches. Terminal branches may be killed outright, which will result in denser growth and the production of multiple stems. By summer, the needles that were mined first have died and turned brown, and wound areas are covered with protective resin-coated webs. Early damage indicators are yellowing needles near the tips of twigs and small, clear deposits of pitch around new bud clusters. Repeated infestations may leave trees unsightly.

CONTROL

Cultural

Since the insect hibernates in the injured branch tips, pruning these areas will destroy the overwintering pupae before they can become active in the spring.

Chemical

The best time for control is when the overwintering larvae first become active in the spring, before they have a chance to re-tunnel into new, undamaged shoots and buds or construct their water-repellent tents. A second chance for control is late summer when eggs are hatching. Spray the ends of branches thoroughly in late June.

ZIMMERMAN PINE MOTH

Description

The adult Zimmerman pine moth is gray, with a front wing mottled with zigzag lines of red. The 3/4-inch long mature larvae are pink to greenish in color and covered with small black spots, each of which contains a single black hair.

Life Cycle

Eggs are deposited in mid-to-late summer on tree stems, under bark scales, or in bark crevices, and hatch within a few weeks (usually late August). The tiny larvae immediately begin spinning a silk shelter where they will overwinter. By mid-to-late April, they begin to emerge from their cocoon and start their feeding process. This continues for two to three months, usually through late July. At this time, the larvae will pupate in either an enlarged tunnel they have mined under the tree bark, or in a resin-coated mass they have created in branch whorls (where branches join the main stem). Adult moths emerge about two weeks later, but being nocturnal they are not often seen. Mating takes place about a week after the adults have emerged from their pupal cases.

Symptoms

Zimmerman pine moth most often attacks Douglas-fir and Scots, Austrian, and red pines in the Midwest. The larvae enter the tree in spring to begin their feeding process. At first, Zimmerman pine moth larvae feed on tree bark and later tunnel into the cambium area of new growth on the terminal and lateral branches. These damaged terminals become "fish-hooked" and needles turn yellowish-green. Eventually, the affected shoot dies and turns brown. The first sign of an infestation is the appearance of small masses of pitch, reddish in color, which is produced as a result of larvae boring under the tree bark. As they continue to tunnel and feed, more pitch will bleed from the tree and the appearance of pitch mixed with the red sawdust-like shavings is an indication of larval presence. These pitch masses will be soft and shiny when the larvae are active, and harden and fade to yellow or white as the infestations age. Pitch masses are most commonly found near the trunk whorls, but can also be seen on large branches and terminal shoots.



One of the symptoms of a Zimmerman pine moth infestation is thick sap emerging from branch whorls

The larvae may tunnel as much as one to two feet down the stem, where they disrupt the downward movement of food from the tree canopy to the roots, but they do not interfere with the transport of water from the roots to the canopy. Tree growth can continue above the girdled area, but will cease below it. It is at this weakened point that trees are most prone to breaking and are extremely vulnerable during strong winds. Toward the end of June, the larvae will leave the new growth to begin tunneling in the whorl area, where they will girdle branches and leaders.

CONTROL

Cultural

Proper mulching, watering, and pruning keeps trees healthy and less susceptible to attack. Whenever possible, infested areas can be removed (mid-summer), which will destroy the shoots before adults have a chance to emerge and lay eggs.

Chemical

The newly hatched and immature larvae are most vulnerable to chemical control as they first emerge from their overwintering cocoons in early spring. However, a new generation of larvae are also exposed for a short period of time before they begin to bore under the bark in late August, after which time chemical control measures are difficult to administer. When damage is heavy and occurs repeatedly, insecticides are the most practical means of control. Good coverage is vital but hard to accomplish. The

spray must be applied so that the stems and main branches are thoroughly wet. If the canopies are too dense for the spray to reach them, the spraying will be ineffective. Spray trunks and branches in mid-April for young larvae and/or mid-August for adults and young larvae.

Refer to the *Illinois Urban Pest Management Handbook* (University of Illinois Cooperative Extension Service) for a complete listing of chemical recommendations. Use pesticides safely and wisely; read and follow label directions.

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