

Figure 1. White satin moth adults are about 1 inch in length and have wingspans up to 2 inches long. Photo by Jeff Knight.

WHITE SATIN MOTH

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White satin moth (*Leucoma salicis*) was first introduced to North America from Eurasia in the 1920s. It spread throughout most of the northern part of the U.S. and has become established in most Western states. The moth was first discovered in Nevada in 1981 and now is found in all of our northern counties. In recent years, we have seen several cycles of population crashes and spikes. Some of the more severe outbreaks have been within Lake Tahoe Nevada State Park. The moths also are showing up in urban areas, where they can damage trees and cause a nuisance because of the large numbers of caterpillars and adults.

The leaf-eating caterpillars (the larval stage of development) feed on poplar, cottonwood, aspen and willow, and sometimes oak and crabapple. The caterpillars consume the tissue between the leaf veins, causing skeletonization, defoliation and branch dieback. If defoliation continues, along with additional stressors such as drought, diseases or other pests, the untimely death of the tree may occur.

Control of this pest is possible by carefully monitoring trees as they are leafing out to scout for cocoons and caterpillars.

IDENTIFICATION

Adult (*Figure 1*): White satin moth gets its name from the adult moth's silvery-white body and satin-like wings. Their bodies are actually black in color, but appear white due to a dense layer of white scales and hairs giving the moth a furry look. Adults have a wingspan of 1.5 to 2 inches.

Larva (caterpillar) (*Figure 2*): As a type of tussock moth, the caterpillar varies in color from pale or medium greyish-brown to black. A full-sized caterpillar is about 1.75 inches long. It can be easily identified by a row of yellowish or milky-white circular shapes on its back, in





Figure 3. Look for white satin moth cocoons late summer through the following spring, when the caterpillars emerge to feed. Photo by Jeff Knight.

between rows of reddish-brown circles in pairs. Tufts of reddish-brown hairs stick straight out of its sides and back. Look for late instar caterpillars in early spring, and newly hatched caterpillars during August and September.

Pupae (cocoons) (*Figure 3*): Dark-brown or black cocoons are often found encased in a loose silk-like sack. Cocoons can be found in rolled leaves, in bark crevices, and on branches and outdoor surfaces, such as fence posts or along walls.

Eggs (*Figure 4*): Greenish, round, flattened egg masses may be found on tree trunks, branches or leaves. Each egg mass contains 150 to 200 eggs, and is covered in a frothy secretion.

LIFE CYCLE

To control any pest, it's important to understand its life cycle to know when the pest is most susceptible to control. White satin moths have a unique life cycle. They overwinter as partially grown larvae hidden within camouflaged web-like pupae in crevices. The larvae feed before they overwinter in August to September, and again after they emerge from overwintering sites in mid-May. By the end of June, they are done feeding and spin cocoons in any place they can find. Shortly afterwards, moths emerge from their cocoons, and females lay egg masses from July until mid-August. Eggs hatch sometime in August, and young caterpillars feed until September, when they seek protected sites to overwinter. White satin moth produces one generation per year.

DAMAGE

Caterpillars feed on the leaves of poplar, cottonwood, aspen and willow, preferring aspen. Most damage is seen during mid-May through June, after hungry caterpillars wake from hibernation and feast before spinning cocoons. During this time, entire leaves can be skeletonized, leaving only the major veins behind. White satin moth caterpillars can defoliate entire trees in early summer, only to return in August and September as freshly hatched caterpillars to skeletonize new leaves that trees have pushed out since June. When trees are defoliated year after year from infestations, they become more susceptible to opportunistic fungi and other insect pests. Constant defoliation can also reduce plants' natural nutrient-making process, photosynthesis, and this leads to undernourished trees and eventual death, especially in older trees.

MANAGEMENT

Scouting is critical to managing this pest. Adult moths are attracted to light and will congregate in the evening around porchlights and streetlights. When this is seen around a home, examine the trunks and branches of susceptible trees for the egg masses, and look for young caterpillars traveling up the trunk and branches to the leaves. The best time to control this pest is early spring when caterpillars emerge from their cocoons and begin ingesting large amounts of leaf tissue.



Figure 4. White satin moth egg masses contain 150 to 200 eggs each and are covered with a frothy secretion. The eggs take about two weeks to hatch. Photo by Jeff Knight.

Prevention

Keeping susceptible landscape

trees healthy and free of drought stress can reduce overall damage from this pest. Trees already stressed by other factors have a harder time coming back from partial or full defoliation. Information on proper planting, tree health and watering requirements can be found at local Cooperative Extension offices.

Cultural Controls

Pruning at the proper time of the year and reducing flesh wounds to the trees' branches and trunk can lessen the vulnerability of trees as host sites.

Physical Controls

A strong spray of water can be used to dislodge egg masses or remove caterpillars. Sticky bands placed high up around the bark of trees can trap caterpillars as they move up the trunk to feed on leaves, or down the trunk in search of a pupation site.

Biological Controls

Birds, parasitic wasps, lacewings, predatory mites and some beetle species are natural enemies of caterpillars. Parasitic wasps and flies have proven to naturally reduce populations in many regions, and can keep smaller outbreaks in check. Planting a diversity of flowering plants, including native plants, can encourage and support natural enemies.

A microbial insecticide is available for control of

caterpillars. Bacillus thuringiensis var. kurstaki (BTk) is a soil bacterium that produces a protein toxic to larvae. This product controls the caterpillars during their feeding times (spring through early summer and August through September). In order for this product to work, the caterpillars must eat the foliage that came in contact with the spray. It is most effective when young larvae begin to feed on new emerging leaves in spring during the second instar larval stage. It can take up to five days for caterpillars to die after ingesting this spray, and the product may need to be reapplied if infestation is still prevalent. Many BT sprays are sensitive to ultraviolet rays, so they should be applied early in the morning or later in the day. Check expiration dates if using the same container year after year, as many have a limited shelf-life. BT products are selective controls and safer for pollinators than other insecticides.

Chemical Controls

Chemical controls include insecticides that contain carbaryl or cyfluthrin. These insecticides should be applied in early spring as soon as the foliage appears and caterpillars are feeding.

Caution: These insecticides are especially toxic to beneficial insects, including pollinators, and should not be used when trees are in bloom.

For all pesticides, always read the label and follow the instructions for application.

Because the chemical controls effective for white satin moth caterpillars are contact insecticides, the caterpillars must feed on them to be effective, and the product must be applied to reach as much of the tree's leaf area as possible. It can be challenging to reach the upper branches of tall trees, so many people will be tempted to try a systemic insecticide with the active ingredient imidacloprid in an attempt to get better control. Unfortunately, imidacloprid is not effective on moth caterpillars. For best results, it is recommended to use multiple strategies, including cultural and physical methods, to control this pest.

White satin moth, although beautiful, can be destructive in landscapes. Take steps now to regularly scout for egg masses, caterpillars and cocoons. When they are discovered, institute a comprehensive multi-pronged approach to control them. Prevent future infestations by keeping trees at their optimal level of health.

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