



TREE NOTES

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Pete Wilson
Governor
State of California

Richard A. Wilson
Director

Douglas Wheeler
Secretary for Resources
The Resources Agency



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Sequoia pitch moth—Enemy of Five California Pines

David Adams

Forest Pathologist, Lewis A. Moran Reforestation Center, P.O. Box 1590, Davis, CA 95617

Introduction

The rarely seen yellow and black bodied adult sequoia pitch moths (*Synanthedon sequoiae*) resemble yellowjacket wasps in color and are somewhat larger in size. They belong to a group of moths known as clearwing moths, having hairless caterpillars as larvae. Five pine species (Monterey, Bishop, shore, sugar and ponderosa pines) are its known California hosts. This insect has not been found attacking either of the California sequoias, for which it appears to have been named. Attacks of pine hosts can be common around injuries and at weakened sites on the bole and branches. Their range is the western United States and British Columbia. Frequently, trees will be attacked year after year. Stressed trees appear to be more readily and repeatedly attacked than healthy trees. These attacks produce readily noticeable, globular or semi-runny pitch masses that can contribute to fire hazard.

Although sequoia pitch moth attacks are usually not life-threatening, young pine can sometimes be severely affected. Smaller trees, or the bases of large trees are preferred attack sites. Open-grown Monterey pine are more frequently invaded than those in a forest situation. A closely related species, the Douglas-fir pitch moth (*S. novaroensis*), attacks Douglas-fir, Sitka spruce, Engelmann spruce, ponderosa pine, and shore pine.

Field Identification

Sequoia pitch moth attacks are easily identified by their characteristic unsightly, light colored, gummy pitch masses mixed with insect boring dust on the bark of affected pines (Figure 1). Attacks can occur on trunks, limbs, small and large branches, and even exposed roots; but not cones or branch tips. Resin flow from red turpentine beetle attacks may resemble pitch moth pitch globules, but they are always much smaller and usually restricted to the lower eight feet of the mainstem (See *Tree Notes* no. 9). Pitch masses overlying an active boring may be globular and somewhat pliable, or may be less firm and tend to run down the trunk or branch from the point of



Figure 1 - Pitch mass from active moth attack.

attack. The latter occurrence greatly resembles pitch flow from pine pitch canker infections (See *Tree Notes* nos. 15 and 20). By pulling away the pitch mass of an active attack—it's surface is slightly sticky—you will find a single working larva (Figure 1). Occasionally, pitch moth and pine pitch canker infection may occur together although the two pests are unrelated in their attacks.

Life Cycle

Adults emerge from May through August, with peak emergence in June and July, and are daylight active. Females climb out of their pupal case (chrysalis) onto the tree, emit a sex attractant (pheromone) and mate before flying. Apparently, females live only a few days to a week; during this time she deposits about 50 eggs. Eggs are oviposited in very low numbers or singly in bark crevices in healthy tissue and in wounded areas of the tree. Usually just one larva will survive when multiple eggs are laid at a single site. Feeding sites are established in the cambium and inner bark (phloem) by larvae tunneling through the bark or wounded tissue. During their second year the light- to amber-colored, dark headed larvae grow to three-fourths inch for males, to an inch and a half for females.

Their complete life cycle requires two years. During their second year, larvae move from the cambium to pupate within a silk lined pupal case that partially extends outside of the pitch globule. Adults emerge from these protruding pupal cases after about 30 days. Often you can find remnants of the empty pupal case protruding from an older pitch mass (Figure 2).

Control

No chemical control is known, nor usually is one needed. Some protection to ornamental Monterey pine can be afforded by physically removing the pitch masses to expose or remove the larvae as early as possible. Keeping the tree healthy will reduce attack incidence due to tree stress. Since many attacks take place during late

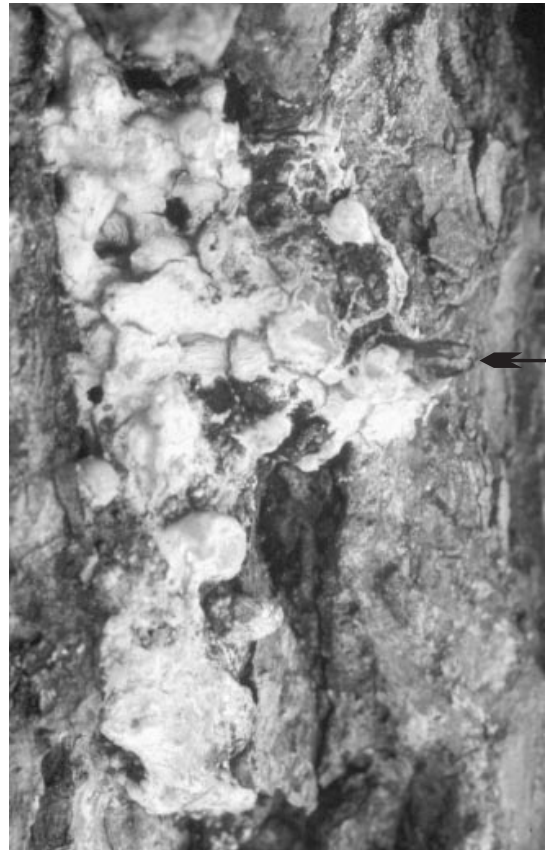


Figure 2- pitch mass with pupal case.

spring through summer at wounding sites, it is important to avoid wounding the tree during this time. Branch removal creates wounds that are attractive to the moth as noted by their colonization of the edges of cut branch ends. Pruning should be done during winter months to avoid the more active colonization period of summer and fall. Following recommended arboricultural pruning practice will lessen time of wound healing.