Cooperative Extension University of California Ventura County

Landscape Notes

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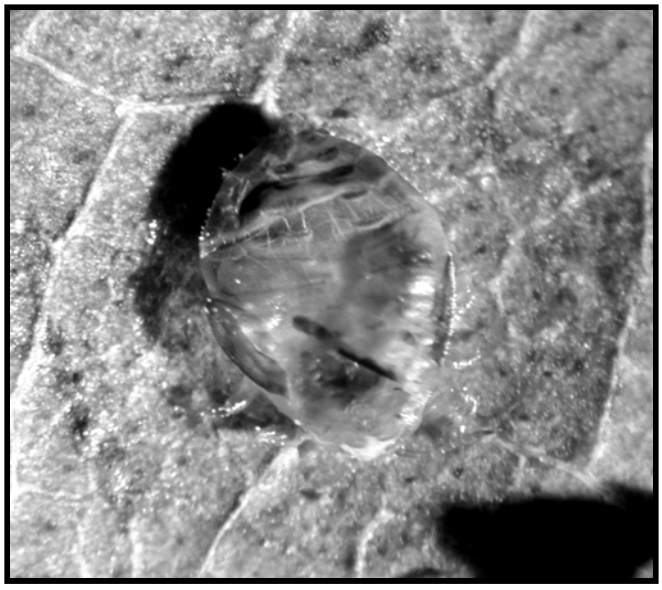
Lerp Psyllid News

Lerp psyllids continue to damage red gums throughout Ventura County. Some trees have died. However, most red gums continue to flush new growth and "hang in there". Approximately one year ago (Sept. 25, 2000) we released *Psyllaephagus bliteus* a parasitoid wasp to control lerp psyllid in Ojai at the Ojai Valley Inn. Very few insects were released only 35 males and 45 females. We have not seen evidence of these insects until quite recently. On September 24, I found evidence of parasitism along highway 33 adjacent to the Ojai Valley Inn where we released our wasps. Subsequently, I found exit holes in lerps and dead parasitoids at the release site where we monitor psyllid populations (no parasitoids have been found in the sticky traps yet). I then found *Psyllaephagus* in Ventura at Wells road and 126 Freeway. For a good discussion of the parasitoid life cycle and photographs, see the Dahlsten website at (http://www.cnr.berkeley.edu/biocon/dahlsten/rglp/RLP-para.htm).

Psyllaehagus bliteus

The big question is; will the parasitoid solve the problem, that is regulate the pest. According to Dr. Dahlsten at the Eucalyptus Pest Management Workgroup held at Cal Poly on October 3, It is just too early to answer that question. However, observations of trees in San Diego County suggest that where parasitism is extensive, trees are starting to recover. Yet, trees usually recover in the winter or lat fall months without any help from parasites. So we are looking for a sustained recovery over a longer period and it is simply too soon after the parasites are starting to work to know if that is happening. Right now, parasitism is not extensive in Ventura County, just wide-spread and the numbers of parasitoids are very low. Hopefully populations will increase throughout the fall and recovery of trees will continue through the spring flush of growth.

LERP with Parasitoid Exit Hole



Psyllid nymph "mummy"

It is very important to collect information on how far the parsitoids have spread in Ventura County. You can help out by examining Redgum foliage and looking for signs of parasitism. The sure fire way to identify the presence or past presence of parasitoids is to find circular exit holes in the lerp (Photo1). These are usually low on the lerp and may be obscured by copious sooty mold. The other way to find evidence of parasitism is to turn over lerps and look for psyllid nymph mummies (photo 2). You probably will not see living wasps, they are very small and very active. They will not be hanging around waiting for human observers. If you find evidence of parasites, give me a call or leave a voice mail message at 805-645-1458.

Conk Season

Fall is **the** season to find mushrooms growing from trees. Many samples come into our office at this time of year. Of course, people are looking for identification of the unusual growth on their tree, but they are also asking for interpretations. What does it mean that they find this mushroom growing from their tree? The following is excerpted from the Landscape Disease Symposium.

Laetiporurus Surfureus

Wood decay of landscape trees is caused mostly by fungi in the Basidiomycota and represent a distinct problem in landscape management. Wood decay is generally observed in advanced stages on older trees after extensive fungal colonization of the wood has occurred. Management problems associated with wood decay include obvious symptoms such as broken limbs and toppled trees, as well as more discrete symptoms such as branch dieback or tree decline. Wood decay fungi that cause these disorders usually remain in the secondary xylem or in the heartwood of older trees. Only a few of the fungi that cause wood decay, however, have been demonstrated to cause tree death. In these cases, wood decay fungi grow from the secondary xylem to the primary xylem (sapwood) or into the cambium. The result is root death or the development of trunk or limb cankers.

Symptoms

Symptoms of wood decay of living landscape trees include two types: white rots and brown rots. These decays are usually distinctive in exposed wood and the extensive damage they cause may result in structural failure of the wood. White rot fungi are the most common and are characterized by producing a moist, soft or spongy decay that becomes lighter in color than sound wood. In white wood rots, all the major structural components of the cell wall including cellulose, hemicellulose, and lignin are degraded. In some cases, as with fungi that cause selective delignification, the wood becomes bleached white in appearance. The strength properties of white-rotted wood are decreased only after advanced stages of decay. In brown rot of wood, the decayed wood is brown, dry, and crumbly, with both longitudinal and transverse cracks. This is a result of the selective removal of most of the polysaccharides from the wood with little degradation of the lignin component. Strength properties of brown rotted wood are significantly reduced or lost entirely in a relatively short period after decay is initiated.

Effects induced by these decays on landscape trees include limb breakage, uprooted trees, or trees broken at the soil line during wind storms, as well as trees with decreased vigor, dieback, and death. Canker formation, tree gumming (hardwoods) or pitch formation (conifers), and death can occur when decay fungi such as species of *Armillaria* invade cambial tissue.

Causal Organisms

Fungi that cause extensive wood decay of landscape trees are classified in the Basidiomycota, Hymenomycetes (phylum, class). Common species occurring on landscape trees in California are indicated in Table 1. These fungi produce a reproductive structure known as a basidiocarp or basidiome that is commonly known as a conk, bracket, or shelf. These common names provide descriptive names for these fungi. In the basidiocarp, specialized cells called basidia are produced. This is where sexual reproduction occurs and sexual spores known as basidiospores are formed. The tissue where the basidia are formed is known as the hymenium and this tissue can be arranged in numerous ways depending on the species of the decay fungus. The hymenium can line the inner surface of tubes in polypore fungi (e.g., *Ganoderma*, *Phellinus*, and *Laetiporus* species), comprise the surface of gills or lamellae as in agaric fungi (e.g., *Armillaria*, *Pleurotus*, and *Schizophyllum* species), or compose the surface of flat or resupinate basidiocarps.

Disease Cycle and Epidemiology

In general, wood decay fungi enter trees through injuries or from root to root contact. Although the development of decay varies with species of decay fungus and tree, there are similarities among the processes involved. In landscape trees, air-borne basidiospores of wood decay fungi can germinate and enter through pruning or thinning wounds, broken branches, injuries from other organisms (e.g., galls or cankers), or trunk and root injuries from lawn mowing or trimming equipment. Additionally, some wood decay fungi can move from tree to tree via root contact or natural root graphs as their mycelium (or specialized mycelium known as rhizomorphs) colonize the wood. Once inside the wood, these fungi develop as mycelium growing mostly upward and downward following the vascular cylinders of the wood rather than radially. In some wood, such as that of hardwoods, decay

columns may be contained to the diameter of the tree at the time of infection. In other wood, such as that of conifers, the decay column can enlarge in diameter as decay advances. Basidiocarps of decay fungi develop usually from a location where tree tissue has been killed or at the site of entry after substantial decay has occurred. The fruiting bodies of wood decay fungi may be annual (e.g., *Armillaria, Inonotus, Laetiporus, Oxyporus, Pleurotus, Stereum, Schizophyllum, Trametes* spp.) or biennial to perennial (e.g., *Ganoderma, Phellinus* spp.).

In living trees, wood discoloration and decay involves a number of processes that occur concurrently and successively. Exposed wood undergoes a number of chemical changes involving oxidation of compounds deposited in the wood during its development. Discoloration results and can extend inward, upward and downward from the injury but not outward where new growth occurs. Many microorganisms can grow on the exposed, moist wood. These organisms do not cause wood decay but they can increase discoloration and wetness of the wood or erode parts of the cell wall. Wood decay fungi commonly function as secondary invaders of tree wounds following a succession of microorganisms including bacteria, yeasts, and other fungi. Wood decay fungi, however, are capable of decaying wood in the absence of other organisms and decay in a tree may or may not be limited to one decay fungus. Furthermore, the processes of wood discoloration and decay may not continue exactly as described herein. Depending on other factors, these processes may stop at any stage or they may be initiated many times with every injury over the lifespan of a tree.

Table 1. Common species of decay fungi, arrangement of fertile tissue, type of decay, location on trees, and associated injury on landscape trees in California.

Genera and Species	Hymenium	*Type of Decay	**Location on Tree	***Associated Injury
Armillaria mellea	Gills	White	R, T	NW
Ganoderma brownii	Tubes	White	R, T	P, Mt
Ganoderma lucidum	Tubes	White	R, T	P, Mt
Inonotus dryophilus	Tubes	White	T, S	P, Mt
Inonotus dryadeus	Tubes	White	T, S	P, Mt
Inonotus cuticularus	Tubes	White	T, S	P, Mt
Laetiporus sulphureus	Tubes	Brown	R, S, T	P, Mt
Oxyporus latemarginatus	Tubes	White	R, T	Mr, Mt
Phellinus gilvus	Tubes	White	T, S	P, Mt
Phellinus robustus	Tubes	White	T, S	P, Mt
Pleurotus ostreatus	Gills	White	T, S	P, Mt
Schizophyllum commune	Gills	White	T, S	S, P
Stereum spp.	Smooth Hymenium	White	T, S	P, Mt
Trametes hirsuta	Tubes	White	T, S	P, Mt
Trametes versicolor	Tubes	White	T, S	P, Mt

* - Type of decay: White = white rot and Brown = brown rot of wood.

** - Location on tree: R = root, S = Scaffold branch, and T = Trunk.

*** - Associated injuries colonized: P = pruning wounds, NW = no wounds necessary, Mt = Mechanical trunk injuries, Mr = mechanical root injuries, S = Sunburn injuries

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Presents

Landscape Disease Symposium

November 21, 2001
7:30 am (Registration) – 5:00 pm
Rancho Del Rey
655 Burnham Road, Oak View, CA

SYMPOSIUM AGENDA AND REGISTRATION FORM INSIDE THIS NEWSLETTER.

THIS IS THE ONLY NOTICE THAT WILL BE MAILED TO YOU. REGISTER NOW!

Farm Advisor