Proceedings
of the
Fifth Joint Meeting
of the
Western Forest Insect Work Conference
and
Western International Forest Disease Work Conference

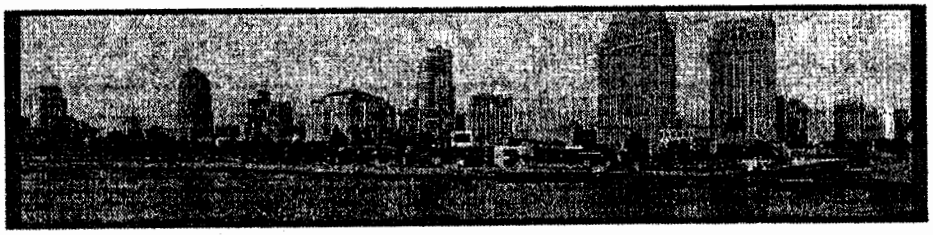
San Diego, California
April 26 – 30, 2004

Compiled by:

Steve Seybold, Research Entomologist
and Julie Tillman, Volunteer
USDA Forest Service
Pacific Southwest Research Station
Chemical Ecology of Forest Insects
720 Olive Drive, Suite D
Davis, California 95616 USA

Photos provided by Pete Angwin, Ron Billings, Sandy Kegley,
Mark Schultz, John Schwandt, and Bill Woodruff

Proceedings reviewed by Christopher Fettig, José Negrón, and Sheri Smith



Termite Detection

Vernard Lewis, Div. Insect Biology, University of California, Berkeley, CA

Dr. Lewis reviewed advances in termite detection since 1989. He emphasized problems resulting from missed inspections and infestations hidden behind walls. Although visual inspections continue to be the mainstay for searching for termite infestations by the structural pest control industry, there are few studies that attest to the efficacy of this method. Dr. Lewis' personal experience in California suggests that many infestations go undetected mainly due to wall coverings, inaccessible areas, and other obstacles to visual searches. Advances in termite detection have been proposed and commercially marketed in the past 15 years and include microwaves, infrared, and X-ray technology. Unfortunately, little has been published on the accuracy of these detection technologies. The combination of detection devices, especially X-ray and acoustic emission (AE), has caused some excitement among pest control professionals and researchers. However, field evaluations are lacking. A field study now being conducted in southern California may provide useful information of detection efficacy and ease of use of X-ray and AE equipment. Still unknown is the level of acceptance of these new detection technologies by termite inspection and treatment professionals. An unresolved issue is how, or if, the federal and state agencies will regulate detection technologies, particularly those that may be perceived as dangerous, such as microwaves and X-ray. How the public will respond to, and accept, new termite detection technologies remains unknown.

Wood Treatments and Termite-resistant Building Materials

J. Kenneth Grace, Department of Plant and Environmental Protection Sciences, University of Hawaii at Manoa, Honolulu, HI

Termites continue to represent a major threat to wood-based materials. In Hawaii, the number of established termite species has doubled within the past decade, with the most recent invader being *Coptotermes vastator*, congener of the notorious Formosan subterranean termite, *Coptotermes formosanus*. Wood preservative treatments are required for structural lumber in Hawaii. The most common treatment for wood in protected, above-ground use is disodium octaborate tetrahydrate (DOT), marketed as Hi-Bor. For exposed situations, or soil contact, chromated copper arsenate (CCA) was the most popular treatment, although penetration was poor in Douglas-fir lumber. However, as of January 1, 2004, CCA is no longer produced. Another arsenical treatment, ammoniacal copper zinc arsenate (ACZA, marketed as Chemonite), is still available, but has limited popularity due to the dark color that it imparts to treated wood.

On a nation-wide basis, there are currently 11 commercial DOT-based preservative products, and there is still considerable interest in "fixing," or at least slowing down diffusion of, boron in wood. One sodium silicate borate product (Envirosafe Plus) is currently marketed as having these characteristics. Most of the void for exterior applications left by the demise of CCA has been filled at this time by alkaline copper quats (ACQ), with at least three commercial products available. Copper azole has also claimed a smaller part of this market, and copper citrate will

probably be available in the not too distant future. Finally, usage has expanded slightly for copper naphthenate (on the industrial side, particularly for utility poles) and copper-8-quinolinolate (on the consumer side). Organic preservatives, held in check for many years by the relatively low cost of CCA, are currently a growth area in R&D.

In the absence of arsenic, the current copper-based preservatives are largely repellent to termites, rather than toxic. Laboratory and field results are quite promising, but are relatively short-term at this point. The longevity of this repellent mode of action is not yet known. As with DOT, the Formosan subterranean termite requires higher copper concentrations for efficacy than do other termite species found in the United States.

Currently, there is great interest in new wood composite materials, such as thermoplastics and cement-based products. These are resistant to termite attack, although termites will remove wood particles if they can physically reach them. However, possibly the largest growth in construction materials in the past several years has been with non-wood products: steel framing (which now has approximately 40% of the construction market in Hawaii), plastic siding and fencing, and now plastic interior building products as well. As long as these products are hard enough, or the surface is not sufficiently abraded for termites to grasp them with their mandibles (i.e., as long as they are hard and polished), they have a high degree of termite resistance. This market growth is a challenge to the wood industry, as it searches for efficacious and cost-effective preservatives.