

EVALUATING LURES TO DETECT SIRICIDS INFESTING CONIFERS OF THE SIERRA NEVADA AND THE ALLEGHENY MOUNTAINS: POTENTIAL FOR TRAPPING *SIREX NOCTILIO*

Nadir Erbilgin¹, John Stein², Robert Acciavatti², Carline Rudolph³,
Nancy Gillette⁴, and David L. Wood¹

¹Division of Organisms and Environment, University of California, Berkeley, CA

²U.S. Forest Service, Forest Health Technology Enterprise Team, Morgantown, WV

³U.S. Forest Service, Forest Genetics Lab, Placerville, CA

⁴U.S. Forest Service, Pacific Southwest Research Station, Berkeley, CA

ABSTRACT

The European wood wasp (*Sirex noctilio*) has become established in several countries in the Southern Hemisphere where North American pine species are widely used in plantations. Therefore, *S. noctilio* may pose a threat to North America's conifer forests, e.g., especially Monterey, loblolly, slash, lodgepole, and ponderosa pines. Wood wasps of the genus *Sirex* and other genera are well represented in the forests of North America. Our objective was to characterize variation in the behavioral chemistry of wood wasps in the Central Sierra Nevadas in California and the Alleghenies in West Virginia.

We tested several compounds during 2004-2006 using various release devices that were attached to flight intercept traps. Chemicals and release devices were provided by ChemTica Internacional (Son Jose, Costa Rica). We tested monoterpenes [(-)- α -pinene, (+)- α -pinene, (-)- β -pinene, and (+)-3-carene] in September-October 2004 and different classes of terpenoids [monoterpene hydrocarbons ((-)- α -pinene, (-)- β -pinene, 3-carene), alcohols ((-)-cis-verbenol, (+)-cis-verbenol and (-)-trans-verbenol, (+)-trans-verbenol),

aldehydes ((-)-myrtenol, (+)-myrtenol, geranial), ketones (pinocarvone, fenchone, verbenone)] in July-October 2005. Based on the results obtained in 2005, we tested fenchone, (+)-3-carene, (+)-3-carene + fenchone, (+)-3-carene + ethanol, (-)- α -pinene + ethanol, siren lure (a mixture of α -pinene and β -pinene), ethanol, and a blank control in June-October 2006.

The most abundant species caught were *Sirex areolatus*, *S. behrensii*, *S. cyaneus*, *S. longicanda*, *Urecerus californicus*, and two unknown species in California, and *S. cyaneus*, *S. edwardsii*, *S. nigricornis*, *U. cressoni*, and *Tremex columba* in West Virginia. Our 3-year study indicated that (-)- α -pinene in combination with ethanol or 3-carene alone attracted significantly more wood wasps than the control and the remaining treatments. Although ethanol is not attractive to wood wasps, it synergized attraction to (-)- α -pinene. These results suggest that (-)- α -pinene plus ethanol and (+)-3-carene alone are the most promising attractants for native wood wasps. We plan to conduct a release rate study of these compounds in 2007 and to test these compounds in forests where *S. noctilio* is present.