FIELD TRAPPING THE ASIAN LONGHORNED BEETLE (*ANOPLOPHORA GLABRIPENNIS*) IN NINGXIA, CHINA, USING HOST VOLATILES AND COMPOUNDS ISOLATED FROM VIRGIN FEMALE BEETLES

Jacob D. Wickham and Stephen A. Teale

State University of New York, College of Environmental Science and Forestry
Department of Environmental and Forest Biology, 246 Illick Hall
1 Forestry Drive, Syracuse, NY 13210

ABSTRACT

Asian longhorned beetles (ALB), *Anoplophora glabripennis* (Motchulsky) have complex cuticular hydrocarbon profiles and the patterns vary consistently with sex, age, and mating status. Analysis of the cuticular hydrocarbon chemistry of virgin female ALB revealed many new additional compounds that were structurally related to the five monounsaturated compounds identified as the contact sex pheromone by Zhang et al. (2003) and are suspected to have dual roles in the hypothesized mating sequence of ALB as long-range attractants and mate finding, specifically 1) as precursors to volatile female pheromones; and 2) as trail/contact sex pheromones. These compounds are produced in maximum abundance by virgin females and then are "shut off" immediately after mating. These compounds are the basis for formulating lures for testing in China.

Lures containing female pheromone blends were tested in Ningxia, China during summers of 2006-2008 using flight-intercept panel traps. In July 2006, virgin female pheromone blends captured more beetles than mated female blends and single component lure, while in a second 2006 field experiment the full female blend plus plant volatiles and linalool oxide captured more beetles than controls. In July 2007, an experiment with more natural release rates, a three-component blend with plant volatiles and linalool oxide captured more beetles than controls and this treatment preferentially captured males. In July 2008, lures containing additional pheromone components (from virgin female extracts mentioned above, which are found in highest abundance in virgin females then decline precipitously after mating) plus plant volatiles and linalool oxide, again preferentially captured males. These results are the first field evidence of a female long-range pheromone in ALB, or any species of Lamiinae.

Literature Cited

Zhang, A.; Oliver, J.E.; Chauhan, K.; Zhao, B.; Xia, L.; Xu, Z. 2003. **Evidence for contact sex recognition pheromone of the Asian longhorned beetle, *Anoplophora glabripennis* (Coleoptera: Cerambycidae).** Naturwissenschaften. 90: 410-413.