NATURAL ENEMIES OF NATIVE WOODBORERS: POTENTIAL AS BIOLOGICAL CONTROL AGENTS FOR THE ASIAN LONGHORNED BEETLE

Michael T. Smith[1], Roger W. Fuester[1], Joseph M. Tropp[1], Ellen M. Aparicio[2], Daria Tatman[2], and Jeff Wildonger[2]

[1]USDA ARS Beneficial Insect Introduction Research Unit
501 South Chapel Street, Newark, DE 19713 USA
Michael.Smith@ars.usda.gov
Roger.Fuester@ars.usda.gov

[2]Department of Entomology
University of Delaware, Newark, DE 19713 USA
eaparicio@comcast.net
smirk666@hotmail.com
donger@udel.edu

ABSTRACT

Asian longhorned beetle (ALB), *Anoplophora glabripennis* (ALB), is among the high-risk invasive species that recently invaded the U.S. from China. ALB has attacked 25 deciduous tree species in 13 genera in Northeast, most notable seven maple species. Biological control efforts for ALB have been limited in China. Thus, the objectives of studies reported here include: 1) identifying the native cerambycid wood borers and associated North American native natural

enemies found infesting red maple (*Acer rubrum*), pignut hickory (*Carya glabra*), mockernut hickory (*Carya tomentosa*), and Virginia pine (*Pinus virginiana*) stressed by felling, full-girdling, and half-girdling; and 2) evaluating the efficacy of the native natural enemies to parasitize ALB within infested bolts in quarantine. To date, numerous cerambycids and parasitoids, including braconids, ichneumonids, and chalcidoids, have emerged from all four tree species treated by each of the three methods. Most similar to ALB, cerambycids have been recovered from the girdled and half-girdled red maple trees. While most of the cerambycids, braconids and ichneumonids have been identified to genus, they are awaiting taxonomic identification. To date, individuals of most parasitoid species have been caged with the ALB-infested bolts. Most importantly, at least two braconid species (one of which is an *Atanycolus* sp.) and one ichneumonid species appear to parasitize ALB in infested bolts. Furthermore, parasitization by one of the braconid (not *Atanycolus*) species resulted in successful parasitization, development, and emergence of F1 offspring from the ALB-infested bolts. This is significant in that it provides the first concrete evidence of a native natural enemy successfully parasitizing ALB outside of Asia.