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Progress and challenges in protecting North American ash from the emerald ash borer through biological control

Jian J. Duan^{1*}, Leah S. Bauer², Roy van Driesche³

¹USDA, Agricultural Research Service, Beneficial Insects Introduction Research Unit, Newark, Delaware

²USDA Forest Service, Northern Research Station, Lansing, MI

³Department of Environmental Conservation, University of Massachusetts, Amherst, MA

Biological control, involving the introduction and establishment of specialized natural enemies of emerald ash borer (EAB) from Asia, is being evaluated as a management tool to protect ash trees in North America. We will report on the results of EAB population dynamics research from 2008 to 2016 at six biocontrol study sites in southern Michigan, where some of the first parasitoid releases against EAB began in 2007. We found that the introduced egg and larval parasitoids (*Oobius agrili* and *Tetrastichus planipennisi*) play a significant role in suppressing EAB larval densities in saplings, basal sprouts, and smaller trees (DBH <12 cm). The impacts of these parasitoids have increased geographically as these biocontrol agents spread from the initial points of release. We also found that innate tree resistance in young and/or healthy trees, as well as woodpecker predation and larval parasitism by some native parasitoids, are important in regulating EAB densities in regenerating and surviving ash trees at these Michigan study sites. However, as EAB expands to new regions of North America, future studies are needed to 1) evaluate the establishment of EAB biocontrol agents in different climate zones; 2) determine the impacts of established biocontrol agents, and other mortality factors, on different ash species that dominate different regions of the U.S. and Canada; 3) expand foreign exploration for EAB natural enemies in different regions of Asia; 4) identify EAB-resistant ash genotypes in EAB-aftermath forests; 4) develop an area-wide approach to the management of EAB by integrating biocontrol, cultural, and conventional methods.

***Presenting Author:** jian.duan@ars.usda.gov

Science & Management of Ash Forests after Emerald Ash Borer

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