

DOES COMMUNITY STRUCTURE INFLUENCE FOREST SUSCEPTIBILITY AND RESPONSE TO EMERALD ASH BORER?

Annemarie Smith¹, Daniel A. Herms² and Robert P. Long³

¹The Ohio State University, Environmental Science Graduate Program, 400 Aronoff Laboratory, 318 W. 12th Street, Columbus, Ohio 43210

²Department of Entomology, The Ohio State University, Ohio Agricultural Research and Development Center, 1680 Madison Avenue, Wooster, OH 44691

³USDA Forest Service, 359 Main Road, Delaware, OH 43015

Abstract

Emerald ash borer (*Agrilus planipennis* Fairmaire) (EAB) is an exotic, invasive beetle that has infested and killed more than 12 million ash trees (*Fraxinus* species) in southeastern Michigan. If not contained and eradicated, EAB has the potential to devastate ash throughout North America with substantial economic and ecological consequences. The objectives of this research are to (1) determine effects of community composition and stand structure on forest susceptibility to EAB invasion; and (2) quantify effects of EAB-induced ash mortality on forest community composition. In 11 stands studied in southeast Michigan in 2004, there was no relationship

between ash density or relative dominance of ash and EAB-induced dieback, which was high in all stands. *Ulmus* (elm), *Acer* (maple) and *Prunus* (cherry) were the most common non-host species in the understory, suggesting that they will replace ash in the canopy layer, at least in the short term. Ash, however, was the most common species in the sapling and seedling layers, and thus will provide a continual supply of host material for EAB, which will complicate eradication efforts. The EAB invasion has the potential eliminate ash from hardwood forests and alter the composition of North American forest communities.