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## FLIGHT POTENTIAL OF THE EMERALD ASH BORER

Leah S. Bauer<sup>1</sup>, Deborah L. Miller<sup>1</sup>, Robin A. J. Taylor<sup>2</sup>, and Robert A. Haack<sup>1</sup>

<sup>1</sup>USDA Forest Service, North Central Research Station,  
220 Nisbet Building, 1407 S. Harrison Rd., East Lansing, MI 48823

<sup>2</sup>Department of Entomology, OARDC, The Ohio State University,  
Wooster, Ohio 44691

### ABSTRACT

The emerald ash borer (EAB), *Agilus planipennis* Fairmaire (Coleoptera: Buprestidae), is an invasive pest of ash trees (*Fraxinus spp.*) in North America. Native to several Asian countries, EAB was discovered in six southeastern Michigan counties and southwestern Ontario in 2002. EAB presumably emerged from infested solid wood packing materials and/or dunnage about 10 years ago. Isolated infestations continue to be discovered in lower Michigan, Ohio, Maryland, and Virginia as a result of transportation of infested ash nursery stock, firewood, and logs. Federal and state agencies are developing an EAB eradication plan to contain the core infestation and eradicate EAB from isolated infestations. Knowledge of EAB flight behavior and physiology is needed to predict dispersal beyond identifiable boundaries of the core and to estimate the size of isolated infestations. Failure to understand dispersal prior to development and implementation of an eradication plan will clearly reduce its efficacy.

We are using computer-monitored flight mills with tethered EAB adults to measure flight distance, periodicity, and speed over approximately 24-hour time intervals. Preliminary results from 28 adults, flying without rest, food, or water, showed that approximately half of the tethered beetles flew less than 50 m. Of those that flew greater than 50 m, flight distances ranged from 71 to 2,426 m for fed, 6-day-old females. Two unfed, newly emerged females flew 716 and 804 m. Flight ranged from 53 to 4258 m for fed, 6-day-old males. Although few EAB continued to fly after 20 hours of tethering, one 3-day-old male flew 1,653 m and 3,580 m in two consecutive 20-hour blocks of time, for a total of 5,233 m in 40 hours. We believe these results may be conservative estimates for EAB flight potential due to the restrictions imposed on beetles hanging on tethers. Pending hardware and software upgrades, we are planning to monitor flights under varying biotic and abiotic conditions, as well as the studying the relationship between dispersal and reproduction.