

# COMPARING EMERALD ASH BORER DETECTION TOOLS: ARE BIGGER TRAP TREES BETTER?

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## ABSTRACT

Since its discovery in southeastern Michigan in 2002, emerald ash borer (EAB) (*Agrilus planipennis* Fairmaire) has spread into neighboring states and provinces. Detecting EAB at early stages of invasion may provide the opportunity for early implementation of forest management, which may limit the potential of further spread. A field experiment was established in the Lower Peninsula of Michigan, northeastern Indiana, and northwestern Ohio to test the capture rates and effectiveness of eight different trap types for the detection of EAB. Traps included a current-year girdled ash trap tree, a previous-year girdled ash trap tree, a non-girdled ash trap tree, a current-year girdled ash trap tree with purple Tanglefoot®, a current-year girdled ash trap tree at 3 m above the ground, a non-ash trap tree, a current-year girdled ash trap tree with a d.b.h. of at least 30 cm, and a purple, prism trap hung 3 m above the ground in an ash tree. The previous-year girdled trap tree occurred at only 25 sites, and the large girdled trap tree did not occur at 6 sites.

The detection of EAB was independent of the ash species selected for the traps used in this study. At low density sites, where < 200 EAB adults were captured (n=42), large girdled trap trees had the significantly highest mean capture rate per day of adult EAB. When standardized for the surface area of the traps, the large girdle, current-year girdle, and high-girdle trap trees had the highest capture rates of adult EAB. In terms of detection, for current-year and large girdled trap trees, with each increase in diameter of 1 cm greater than 25 cm d.b.h., there was an increase of approximately 9 percent in the odds of detecting EAB. Also, the large girdled trap trees had the only increase in the odds of detecting EAB as ash basal area and total forest basal area increased.

Because the detection of EAB was independent of the species of ash tree used for trapping, the selection of trap trees does not need to be species-specific. As forest and ash basal area increase at a detection site, the large ash trees remain a considerable proportion of the resources available to EAB. The use of the large girdled trap tree may provide more effective detection of EAB at low density.