

EFFECTS OF TRAP DESIGN AND PLACEMENT ON CAPTURE OF EMERALD ASH BORER, *AGRILUS PLANIPENNIS*

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ABSTRACT

The ongoing objective of this research is to develop a trap that can improve the sensitivity and efficiency of emerald ash borer, *Agrilus planipennis* (Coleoptera: Buprestidae) Fairmaire (EAB) survey and aid the overall program in achieving its goals. As part of this work, we sought to determine the optimal location for trap placement. First we placed purple corrugated plastic panels 15 m inside an ash woodlot, 15 m in an adjacent field and along the edge. We caught more EAB in the field and along the edge than inside the woodlot. In a similar study, we looked at the interaction between trap location and trap color on EAB capture. We placed purple, white and red corrugated plastic box traps inside ash woodlots, in an adjacent field, and along the edge. Purple traps in the field caught more than purple traps inside the woodlot. Purple traps at all locations caught more than white or red traps, and there was no difference in catch between white or red traps.

In addition to optimal trap location, we also evaluated traps of four different designs: 1) a girdled tree with a glue-covered band around it; 2) a purple box trap; 3) a purple crossvane trap with a purple top; and 4) the crossvane with a translucent

top. The traps were placed inside a woodlot to accommodate the banded trees. Banded trees caught significantly more EAB than the other three trap types. In a separate study using small nursery green ash we tested four damage types: 1) a crown cut; 2) a root prune; 3) a full girdle; and 4) a trunk scraping. We also tested two controls a rebar pole and an undamaged tree. A purple triangular trap was placed around the base of each tree (and pole). While there were no significant differences between the damage classes and the undamaged tree or among the damage classes, all treatments that included a host were significantly different from the rebar pole control.

From our results we can conclude that purple traps are relatively more effective in open areas than in wooded areas. Banded trees are more effective in wooded areas than other traps tested. We will be performing electroretinographic studies to further evaluate EAB responses to color. It would also be that the beetles are using olfactory cues to aid in finding a suitable host. Currently research is being performed to find potential volatile attractants.