DETECTION OF EMERALD ASH BORER, *AGRILUS PLANIPENNIS*, AT LOW POPULATION DENSITY

Melissa J. Porter, Michael D. Hyslop, and Andrew J. Storer

Michigan Technological University, School of Forest Resources and Environmental Science, Ecosystem Science Center, Houghton, MI 49931

ABSTRACT

The exotic emerald ash borer (EAB), *Agrilus planipennis* (Coleoptera: Buprestidae), was first discovered in North America in Detroit, MI, in 2002. This beetle has killed millions of ash trees in several states in the United States and in Canada, and populations of this insect continue to be detected. EAB is difficult to detect when it invades new areas or occurs at low density. For the foreseeable future, trap tree and ground surveys will be important tools for detecting emerald ash borer populations. In 2008, a large-scale survey using baited purple prism traps was carried out in the United States. The effectiveness of baited purple traps compared with trap trees in areas with low EAB populations is unclear.

In 2008, a field experiment was established at Straits State Park, St. Ignace, MI, to characterize the effectiveness of different trap types in an area of known low-density EAB infestation. The questions studied included: (1) Are girdled trap trees, non-girdled trap trees, or purple prism traps hung in ash trees more effective at trapping adult beetles? (2) Are girdled trap trees, non-girdled trap trees, or purple prism traps hung in ash trees more effective at detecting EAB larvae? and (3) Do canopy assessments of trees indicate whether a tree is infested with EAB? A trapping survey and canopy assessment was conducted during the flight season of EAB. All trap trees, including those that had purple traps hung in them, were then cut and fully peeled in the fall to look for larvae.

Adult beetles were not detected using the baited purple prism trap during the trapping survey. By cutting and peeling the trap trees, it was shown that girdled trap trees acted as sinks for larvae at this low density site; however, the canopy assessment showed that the canopy condition of these trees was not predictive of whether they were infested or not. Of the girdled trees, infested trees were larger in diameter than the non-infested trees. Based on these findings, the use of large girdled trap trees may be the most effective tool for detecting EAB populations at low density.