COST OF POTENTIAL EMERALD ASH BORER DAMAGE IN U.S. COMMUNITIES, 2009-2019

Kent F. Kovacs, Robert G. Haight, Andrew M. Liebhold, Deborah G. McCullough, Rodrigo J. Mercader, and Nathan W. Siegert

Department of Resource Economics (KFK), University of Nevada, Reno, Reno, NV 89557; U.S. Forest Service, Northern Research Station (RGH), 1992 Folwell Ave., St. Paul, MN 55108; U.S. Forest Service, Northern Research Station (AML), 180 Canfield St., Morgantown, WV 26505
Departments of Entomology and Forestry (DGM), Michigan State University, East Lansing, MI 48824; Department of Entomology (RJM, NWS), Michigan State University, East Lansing, MI 48824.
RGH is corresponding author;
to contact, call (651) 649-5178 or email at rhaight@fs.fed.us

Emerald ash borer (EAB; *Agrilus planipennis* Fairmaire), a phloem-feeding beetle native to Asia, was discovered near Detroit, MI, and Windsor, ON, in 2002. As of March 2009, isolated populations of EAB have been detected in nine additional states and Quebec. EAB is a highly invasive forest pest that has the potential to spread and kill native ash trees (*Fraxinus* spp.) throughout the United States. There is little scientific literature on the number of ash trees in developed areas, the cost of treating trees to prevent infestation, and the cost of removing trees in response to infestation. We estimate the discounted cost of ash treatment and removal on developed land defined by the 2001 National Land Cover Database within communities defined by the U.S. Census in a 25-state study area centered on Detroit. We used 100 simulations of EAB spread and infestation over the next decade (2009-2019).

Results indicate more than 37 million ash trees occur on developed land in communities. The simulations predict an expanding EAB infestation that will likely encompass most of the 25 states and warrant treatment or removal of more than 17 million ash trees. The mean discounted cost of treating and removing those trees is $9.9 billion. States with the highest proportions of ash trees treated or removed (>90 percent) are those known to have established outlier populations present in 2009 that are predicted to expand and quickly spread across their entirety (West Virginia, Maryland, Delaware, Wisconsin, and Vermont).

Expanding the land base to include developed land outside, as well as inside, communities nearly doubles the estimates of the number of ash trees treated or removed and the associated cost. The estimates of discounted cost suggest that a substantial investment might be efficiently spent to slow the expansion of isolated EAB infestations and postpone the ultimate costs of ash treatment and removal.