INVASIVE PLANTS IN FORESTS INFESTED BY EMERALD ASH BORER: HOW SCIENTISTS AND MANAGERS WORKED TOGETHER TO DESIGN A USEFUL RESEARCH PROGRAM.
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   Emerald ash borer (EAB) (*Agrilus planipennis*), an introduced beetle, has already killed millions of ash (*Fraxinus spp*.) trees in Michigan and Ohio and threatens all North American ash species. Ash species are the dominant tree species in some riparian and swamp ecosystems, as well as an important component in many upland hardwood forest ecosystems. Ash mortality due to EAB may cause a cascade of effects in these ecosystems. We began our research with a discussion with managers experiencing EAB infestation in their parks to identify research questions of importance to them. We have continued to meet with this group of managers to update them on our results and to gather suggestions for outreach to other managers and to the public.
   To understand the effects of EAB on forest ecosystems, a network of 254 plots in forested areas were established in Ohio and Michigan, representing a gradient of infestation by EAB. Thus far, our research has focused on rates and patterns of ash decline and mortality due to EAB and the response of invasive plants to this disturbance. We have created a model to predict the yearly mortality of ash trees in infested forests. We will identify species of invasive plants likely to become problematic in different ash ecosystems, as well as circumstances, including ash density and invasive species density thresholds, in which the invasive plants may become dominant. Using the tools we create, managers will be able to plan the timing of removal of hazard trees, control of invasive plants, pre-emptive harvests, and restoration activities.