

## Recommendations for moving forward based on management experience and recent research in black ash wetlands

Anthony W. D'Amato<sup>1</sup>, Brian J. Palik<sup>2</sup>, Robert A. Slesak<sup>3</sup>, Greg Edge<sup>4</sup>, Colleen F. Matula<sup>4</sup>

<sup>1</sup>*University of Vermont*

<sup>2</sup>*USDA Forest Service, Northern Research Station*

<sup>3</sup>*Minnesota Forest Resources Council*

<sup>4</sup>*Wisconsin Department of Natural Resources*

The arrival and spread of emerald ash borer (EAB) across the upper Great Lakes region has shifted considerable focus towards developing silvicultural strategies that minimize the impacts of this invasive insect on the structure and functioning of black ash wetlands. Prior to the arrival of EAB, guidance for managing black ash forests centered on increasing the quality and stocking of black ash through partial harvesting based regeneration methods, including selection and shelterwood methods. Early experience with clearcutting approaches in these forests highlighted the risks of losing ash to EAB from these systems, with stands often retrogressing to marsh-like conditions with limited tree cover. Given these experiences and an urgency for increasing resilience to EAB, research efforts began in northern-central Minnesota in 2009 followed by similar studies in the Upper Peninsula of Michigan in 2011 to evaluate the potential for using regeneration harvests in conjunction with planting of non-ash species to sustain forested wetland habitats after EAB infestations. Along with these more formal experiments, a number of field trials and experimental harvests have been employed by managers across Minnesota and Wisconsin to determine effective ways for reducing the vulnerability of forest types with a large black ash component. Collectively, results from these recent experiences with managing black ash for resilience to EAB highlight potential in using regeneration methods, including group selection and strip shelterwoods, to naturally and artificially establish non-ash species and maintain hydrologic function. Nonetheless, significant challenges remain regarding competition and herbivory effects and adaptive approaches will need to weigh the economic costs of addressing these issues relative to the potential ecological impacts of losing tree cover in these areas.

**Presenting Author:** awdamato@uvm.edu