ASHES TO ASHES: LARGE *FRAXINUS* GERMPLASM COLLECTIONS AND THEIR FATES

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As the emerald ash borer (EAB) threatens the survival of our ash species, measures should be taken to preserve their genetic variability in the event that we discover a way to restore populations destroyed by the beetle. As it happens, large germplasm collections exist for our most important and widely distributed eastern species of the genus, white ash (*Fraxinus americana* L.) and green ash (*F. pennsylvanica* Marsh.). The white ash collection, organized by Calvin Bey with the U.S. Forest Service, was begun in 1973 and comprised the progenies of 228 trees representing 39 presumptively native populations from throughout the species' natural distribution. Seed collections were made from an additional 16 populations, but it is unclear at this time whether these were ever out-planted. The green ash collection, organized by Kim Steiner at Penn State, was begun in 1975 and comprised the progenies of 216 trees representing 60 range-wide populations. Long-neglected as scientifically "obsolete," these provenance collections have taken on renewed significance as germplasm repositories in the face of a serious biological threat to the genus.

The white ash collections were planted at 25 locations scattered from Louisiana and Alabama to New Brunswick and Nebraska. Most plantations had progenies from 16 to 27 provenances, and one contained as many as 35. It appears that the complete collection was not represented at any one location. Each plantation contained five replicate blocks with five-tree family plots.

The green ash collections were planted at 12 locations in the northeastern and north-central United States, from Maine to Maryland and west to Nebraska. Most plantations contained progenies from 16 to 45 provenances, but all 60 were represented at one location in Pennsylvania. Most plantations contained 3 to 10 replicate blocks with four-tree provenance plots containing nested, one-tree family plots. However, one plantation contained only two replicates of provenance plots, and two plantations were designed with two- or four-tree family plots completely randomized within blocks.

Of the 25 white ash plantations, 7 are believed to still exist in a recoverable condition with >30 percent survival. All have been (or will be) remeasured and remapped. Two of the others still exist but are in very poor condition. The remaining 16 tests were failures or no longer exist because of land use conversion. The best single collection of germplasm is in Jefferson County, KS, with 44 families representing 27 provenances and >70 percent survival. A plantation at Michigan State University's Kellogg Forest still contains 32 replicated provenances, although survival is down to 33 percent. EAB has been trapped at the edge of this plantation.

Of the 12 green ash plantations, 7 are believed to have >30 percent survival and be recoverable as mapped germplasm collections. The remaining plantations have all been destroyed and the sites converted to other uses. The best single collection of germplasm is in Centre County, PA, with 216 families representing 60 provenances and 85 percent survival. Two plantations maintained by Michigan State University contain most provenances and are in good condition. EAB has been trapped near one.

In the presentation we will outline priorities for germplasm protection in the two species based on these collections of range-wide genetic material.