

# Kentucky Coffeetree, *Gymnocladus dioicus* (L.) K. Koch: Current Abundance in Nature and Prospective Persistence<sup>1</sup>

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Recently, a collaboration between The Brenton Arboretum and the North Central Regional Plant Introduction Station (NCRPIS) was initiated to assemble comprehensive *ex situ* germplasm collections of Kentucky coffeetree, *Gymnocladus dioicus*. *Gymnocladus dioicus* was selected due to its adaptation to poor soils common to urban conditions, extreme drought tolerance, and no reported serious insect or disease problems. These factors make it a promising candidate among diverse tree genera to replace ash trees in urban environments affected by the emerald ash borer (*Agrilus planipennis*). Targeted germplasm collections will eventually represent material from various habitat types and Omernik Level III Ecoregions within the native range of *G. dioicus*.

*Gymnocladus dioicus* was sampled and surveyed at 80 sites across the Midwest from Minnesota south to Arkansas and from Oklahoma east to Kentucky. Our observations in sampling *G. dioicus* across circa 95 percent of the species native range would indicate the species is rare not because of an obvious or direct threat of insect or disease, but rather because of indirect, often overlooked, ecological changes. Observations in nature indicate *G. dioicus* recruitment is poor likely due to the absence of an effective seed dispersal agent, intolerance to shading, and the requirement of scarification to germinate. Observations at NCRPIS have determined that *G. dioicus* is androdioecious, yet this androdioecy is non-functional, confirming xenogamous pollination is required for fruit production.

The Endangered Species Act was passed by Congress in 1973 to protect and recover imperiled species and the ecosystems upon which they depend. Specific factors are typically met for listing a species as endangered or threatened, and these factors are generally obvious and/or recent. However, in the case of *G. dioicus*, historical ecological changes have reduced the potential of this species to persist, warranting evaluation for potential protection.

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