

Conservation Arboriculture & Retrenchment Pruning Research in Minnesota

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It's no secret that many trees in Minnesota are on the ropes. If it's not Dutch elm disease, bur oak blight, or oak wilt it's emerald ash borer (EAB), two-lined chestnut borer, or a combination of abiotic disorders that have many of our trees on a diet of continuous stress. The loss of ash trees, especially, to EAB truly threatens the health and vitality of urban and community forests throughout our state. Depending on the community, this pest alone could eradicate a large portion of a community's tree canopy without protective treatments or other measures. That being said it's even more important to *conserve* the canopy we have.

Large, mature, and damaged trees may create unique and often difficult management considerations for urban forest managers, arborists, and property owners. Very often the perception of risk and increased public scrutiny, combined with a lack of knowledge and training results in the premature condemnation and removal of trees that may have many years of life left. Currently, tools and techniques are available to assess and possibly retain these trees and their benefits safely for many years. Collectively, these approaches are generally described as Conservation Arboriculture, with retrenchment pruning as one technique used in this system of tree preservation.

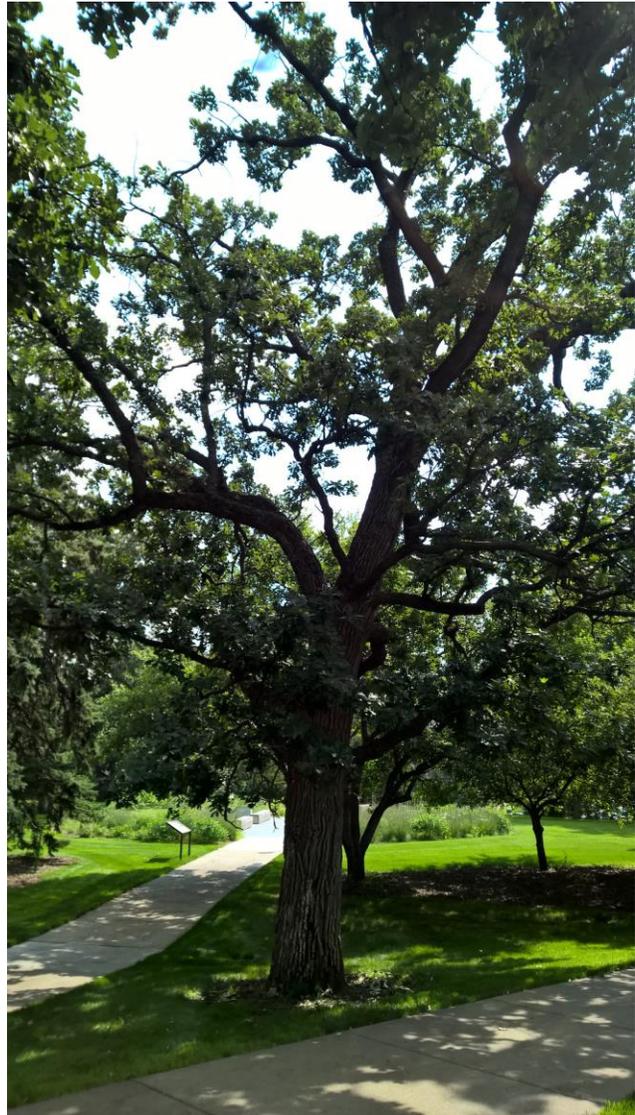


Northern Red Oak Undergoing Retrenchment

Conservation Arboriculture has been around for quite some time, some may argue for hundreds of years. In the modern sense, this field of practice and study has been championed mostly by Neville Fay an arborist based in the UK along with a collaborative group of other practitioners there and in Europe. Unfortunately, these techniques have not yet been subjected to the rigor of replicated, scientific research, despite anecdotal evidence that indicates that these techniques have successfully mitigated risks and increased the functional life of many trees. Additionally, many of the veteran and ancient trees in the UK and Europe are the result of centuries of pollarding - something that did not occur on a widespread basis in the US. Furthermore, the perception of what mature trees *should* look like may be influenced by implicit bias based on a vastly different cultural ecology present in the US.

The addition of Pruning Systems standards in the most recent revision of the ANSI American National Standard for Tree Care Operations (ANSI A300) includes reference to systems that are culturally disparate from the norm for most American arborists and property owners. These systems include pollarding, topiary, espalier, pleaching. None of these systems allow a tree to achieve a “natural” form or anything close to what is commonly called “mature size”, regardless of age. These systems are not unique to the UK or Europe, either. Throughout Japan the practice of *Ueke no Te Ire* creates landscape-sized trees reminiscent of their smaller, potted counterparts known as *bonsai*. Different pruning and tree management systems are simply a reflection of the cultural norms present where they grow.

While the trees and forests that Mr. Fay and his colleagues are working with are considerably older than most we will encounter in Minnesota many of the same concepts and tools can be applied to younger trees and new species. Through careful research and vetting in replicated trials, researchers and cooperative practitioners can develop a reproducible protocol that can be implemented with greater confidence and more consistent results.



A Bur Oak with Thinning Canopy: Asset or Liability?

Thanks to funding from MTGF and partner communities, the Urban Forestry Outreach, Research & Extension Lab in the Department of Forest Resources has begun this process in Minnesota. Work has already commenced to identify candidate species in Saint Paul, Minneapolis, Minnetonka, and on the University of Minnesota campus. Additionally, practitioner surveys will expand the scope of knowledge and help develop Tree Species Profiles (TSP), which will provide the basis for replicating this research as broadly as possible. Management decisions which are currently guided by perceived risk alone can be more informed via the use of modern tools like tomography (tree sonar), Resistograph, in combination with more traditional assessment techniques. Tree size, condition, location, and targets will all play a role in determining how best to proceed with a conservation approach to arboriculture. Individual trees

in a high-traffic public setting will be managed much differently than a stand of trees in a remote or rural area.



Through the use of 21st Century tools and technology the ability to assess a tree for defects is becoming increasingly possible. By eliminating the guesswork of risk assessment, tree preservation can - and should be - based on quantitative data and precise, objective analysis.

With this acceptance of a new approach to tree preservation comes the necessity to educate clients, constituents, and the general public. This approach is not a quick fix, many systems will require years - if not decades - to successfully implement. The primary goal is to develop a long-term approach for maintenance that allows the retention of an increasingly aging population of large trees in our landscapes.

Further Reading

Conservation Arboriculture

Neville Fay

<https://www.treeworks.co.uk/about-treework/publications/>

The Hamburg Pruning System

Dirk Dujesiefken and Horst Stobbe

<https://www.sciencedirect.com/science/article/pii/S1618866704700084>

Developing a Preventive Pruning Program in Your Community: Mature Trees

Ed Gilman and Amanda Bisson

http://hort.ifas.ufl.edu/woody/documents/ch_13_mw06.pdf