

USE YOUR HEAD(ING) CUT TO DELAY DECAY

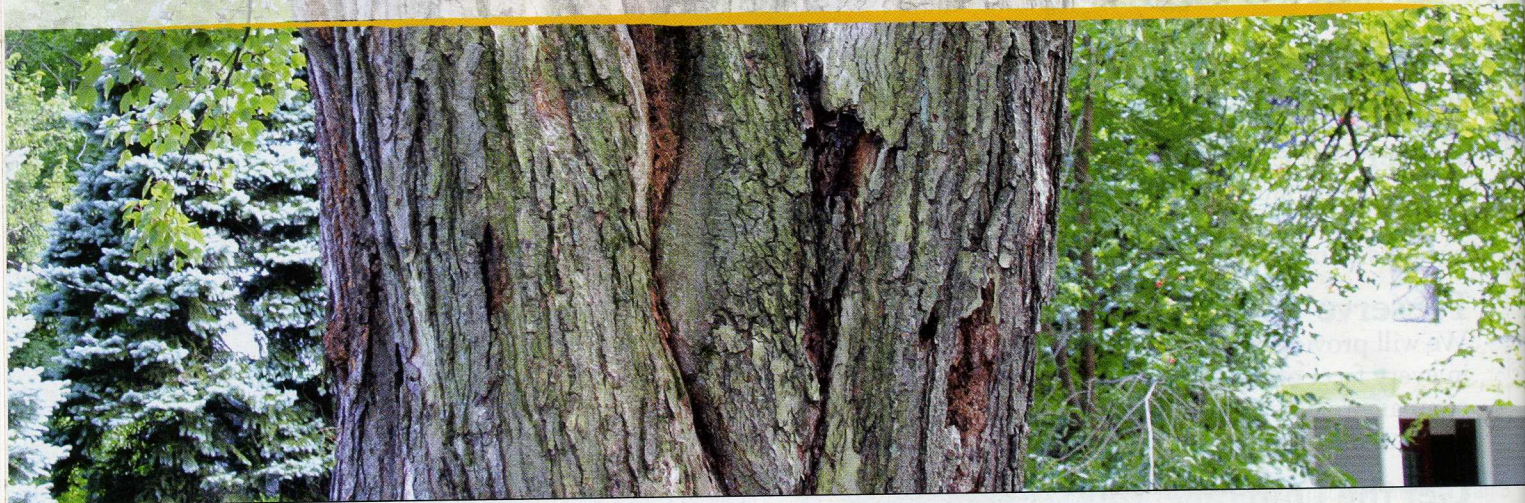


Photo 1: Failure to remove codominant stems and other defective branches directly contributes to poor structure that is common with urban trees. All photos courtesy of the authors.

*By Christopher Luley, Ph.D.,
and Josh Galiley*

One of the most common shortcomings of urban tree management worldwide is the failure to remove select branches in a timely manner throughout the lifetime of a tree. This has many important impacts on management and safety, including:

- contributing to poor structure (such as codominant stems or multiple attachments (Photo 1);
- being a primary source of unbalanced crowns due to overgrown branches, particularly in the lower crown (Photo 2); and
- causing direct conflicts with electrical utilities or other urban elements (Photo 3).

The end result is arborists often “having” to make large pruning cuts that can be a primary source of decay entry into mature urban trees. The premise of this article is that by delaying making these needed

cuts, through a variety of practices, decay infection in large scaffold branches or the main trunk can at least be delayed, if not mitigated.

A primary goal of structural pruning is the planned, periodic pruning of branches to prevent or remove them before they



Photo 2: Large branches in the lower crown of this maple were not removed as the tree was developing. Removal of one of the branches because of a conflict resulted in trunk decay.

become a detriment to the stability or utility of a tree. Because structural pruning is often delayed or not done at all, arborists often are required to make large pruning cuts later in the life of the tree. These cuts are needed to remove severely defective branches, eliminate known hazards, correct storm damage or simply eliminate conflicts (Photo 2).

Herein lies the crux – large pruning wounds are a very common entry point for wood-decay fungi, especially those wounds large enough to expose heartwood, the part of the tree most vulnerable to decay. Eventually, the decay may progress to sapwood and have access to a large portion of the tree as it spreads (Photo 4). This is most common as trees lose vitality as they progress into large, over-mature or older specimens that we often most want to retain in urban environments. Furthermore, some decay fungi also can act as canker agents and kill bark and cambium along with decaying sapwood and heartwood (Photo 5).



Photo 3: An overgrown branch in the lower right crown that is better reduced than removed all at once.

Head, don't remove

Given that large pruning wounds expose heartwood that will usually decay, approaches to pruning that at least delay the potential onset of decay would be beneficial to most urban trees, given their relatively short life span. Delaying decay for even 10 years is significant, given that the life span of many urban trees is less than 100 years. For some urban tree species, a single large cut on the trunk is the beginning of the end, as decay becomes established and spreads into large scaffold attachments or connects with other defects or columns of decay that are already present in the tree.

When arborists are required to make



Photo 4: Decay resulting from a large pruning wound that has spread to sapwood.



Photo 5: A large pruning wound that was infected by the decay fungus mossy polypore (*Cerrena unicolor*). The fungus also can act as a canker pathogen by killing bark and cambium, as well as decaying sapwood and heartwood.

large pruning cuts on the main trunk or even on large-diameter scaffold branches, delaying making the “final” cut, no matter how good the cut is, could have significant impacts. Thus, instead of making the large shiner on the trunk, many trees would often benefit from leaving a long “stub” by making a heading cut or, if possible, a reduction cut (Photos 6 to 8).

The length of the “stub” is not set, but at least three feet is probably a minimum to gain much decay-delay benefit and a chance to keep the branch alive. Longer stubs could be incrementally removed as dictated by follow-up inspections, if long-term retention is undesirable. This would still allow the tree additional time to adjust to the removal of the limb.

Some readers are no doubt questioning if this is a good idea. Consider that most

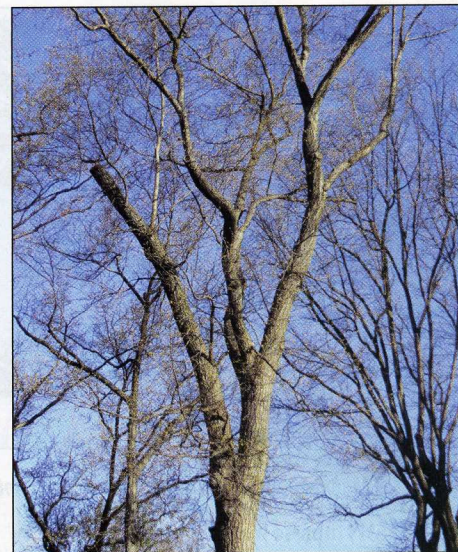


Photo 6: A leader damaged in a storm is retained, even without many lateral branches.

living branches will sprout and thus, leaving a long “stub” will not kill the branch (Photo 7). Heading cuts such as these are allowable under ANSI Part I 2017, where delaying removal has benefits to the tree. In this case, the distance created between the end of the branch and the parent stem is the distance and time it will take any decay fungus to reach the larger stem (Photo 8).

There are other potential benefits from the delayed removal that can help once the branch is removed, if necessary. Natural growth of the parent branch will increase relative to the branch at the point of attachment. This may hasten the sealing of the pruning wound if the stem



Photo 7: A leader reduced more than five years ago continues to thrive. This avoided decay that would have developed in the main trunk had it been removed.



Photo 8: This long stub helps prevent decay from entering the trunk.

eventually has to be removed (Photo 9). Delayed removal also may avoid a dead zone beneath the branch that can devel-



Photo 9: By delaying removal of large lateral branches, the parent stem can increase in size relative to the attached branch, and this may increase the potential for the branch to be sealed over by woundwood.

op when large branches are removed (Photo 10).

Other benefits

Besides delaying decay, other benefits of delayed branch removal include the creation of potential wildlife habitat without creating significant hazards associated with larger dead snags (Photo 11). See "Arborists and Wildlife: Retaining Trees for Wildlife Habitat" by Brian French (*Arborist News*, February 2018, Volume 27 Number 1) for more information.

It doesn't look good

It doesn't look good

It is widely accepted that making the large, clean cut on the main trunk or scaffold may look better. But in the long run, the better appearance is worse for the tree, so this is where the education begins and the tree biology ends.

Arborists often are called on to educate their clients. Leaving larger branches from delayed heading or reduction cuts will likely involve an educational process they need to engage in. Many clients, even where clients are more distant from the trees, such as in municipalities or homeowner associations, may not like the visu-



Photo 10: By delaying removal of large branches using heading or reduction cuts, there is time for the tree to adapt to the loss of a large portion of its live crown. This may help reduce the dieback on the lower side of large branches when they are removed, as seen in this beech.

al appearance of headed branches (Photo 12). Part of the discussion can include the idea that leaving more of the tree retains character. In addition, any new growth

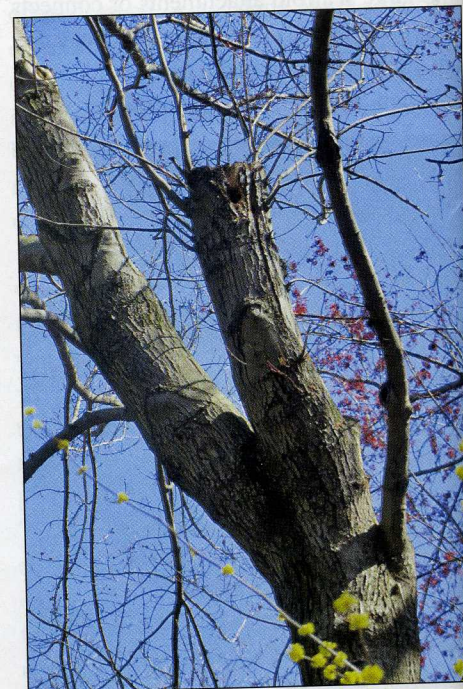


Photo 11: Woodpeckers have utilized this stub for habitat.

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Photo 12: Some find long or large stubs visually unattractive.

from the headed branch can be trained to increase aesthetic appeal over time.

Monitor for maximum benefit


Headed branches used to delay decay onset will likely require monitoring. Even if they die in the near term, most branches will take at least five years before they are at risk of failure because of their large diameter and relatively short length. Being in a service business, arborists can use this as a potential point of service, to inspect and

service delayed heading cuts (Photo 13).

Conclusion: Use your head(ing) cuts

There are relatively few downsides to delaying the final cut when used in situations where headed branches can be monitored and action taken in an appropriate amount of time. If a large branch has to be cut regardless, delaying the final removal is clearly an alternative. As with most of the science and practice of arboriculture, better practices and species recommendations might be developed to keep headed branches alive so they remain intact for the life of the tree. Until then, delayed removal cuts offer the potential to slow one common source of decay in urban trees.

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This article was based on two sessions, "Small and Young Tree Pruning" and "Dirty, Rotten Decay Fungi," presented by Luley at TCI EXPO 2018 in Charlotte, North Carolina, last fall. To listen to audio recordings of these presentations, go to this page in the digital version of this issue online, under the Publications tab, and click here. 

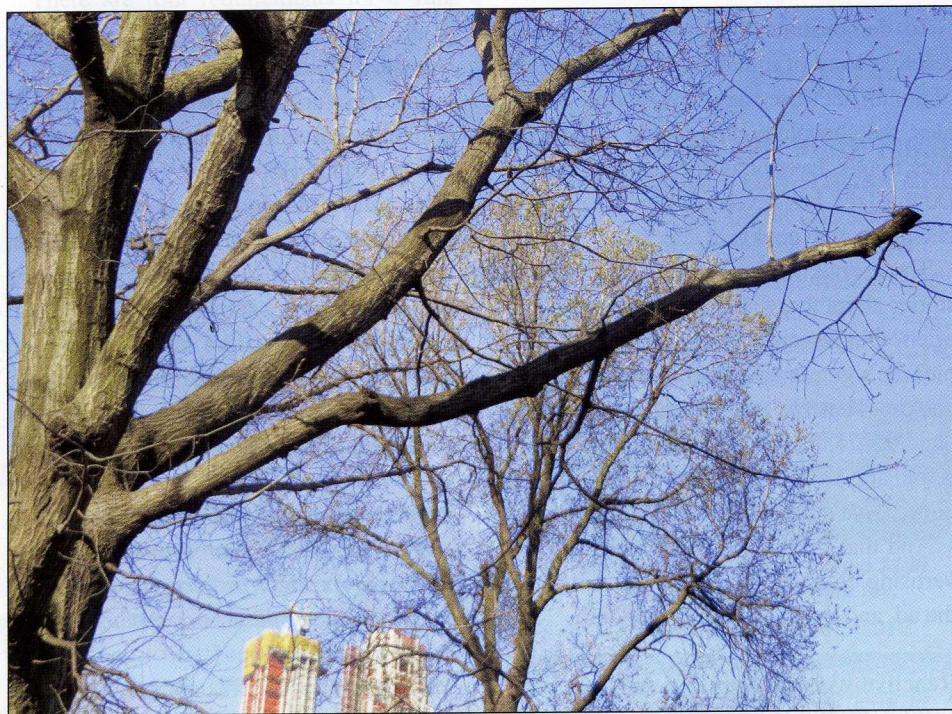


Photo 13: Inspecting headed branches left to delay their removal can be a service event for arborists.

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