

Give Trees Mitigation, or Give Trees Death

(with apologies to Patrick Henry)

By Guy Meilleur

Risk is the potential for injury. All trees and their parts carry risk; from the acorn on the sidewalk that can make us slip and fall, to that heavy branch that can break off and dent our car, to the old oak tree that can fall apart and crush us. Risk management involves “mitigating” – alleviating, moderating, reducing – that risk.

A “hazard tree” has a defect that creates an unreasonable level of risk to a target and requires action. Only after carefully evaluating the severity of the defect and measuring the size of the part and rating the value of the target can we identify a “hazard.” Then the question becomes, how do we mitigate that risk?

Risk posed by acorns is removed by sweeping them off the sidewalk. Risk posed by that heavy branch can be mitigated by light thinning and reduction cuts near the end, or that risk can be removed by removing the branch. But removing that branch increases the risk posed by the rest of the tree. That big wound on the trunk is open to decay. The bark on the inner tree is now vulnerable to sunscald. Nearby



This Yoshino cherry once hung over the road, concerning motorists. Regrowth from decaying wood at topping cuts will create a greater risk.

branches are newly exposed to strain from the wind, so they need to add tissue to reinforce themselves or they may break. The roots, too, are more stressed, because they have lost some shelter from sun and wind. The whole tree’s balance is changed. It makes less food for itself than it did before. So, did removing that branch mitigate risk, or increase it?

Arborists cannot remove all tree risk, unless we clear-cut the entire planet. Our job is to mitigate risk, by providing clearance for wires or roadways or cars, and maintaining health and stability. At times we must remove branches, or entire trees, but sometimes removing trees increases risk. When a client wants that big tree near the house cut down because they fear it, a few reminders are in order:

The worst-case scenario: Let’s assume that the tree uproots in a major storm and falls toward the house. First of all, setting wind exposure and other factors aside, the tree is more likely to fail away from the house, because construction damage, restricted root area and soil compaction tend to limit anchorage toward the house. If we still assume that the tree may fail toward the house, the closer to the house it is, the less velocity it will have, and the less damage it will cause. That 70-foot tall tree that’s 50 feet away will do more damage, so where does risk end? In the past, the Federal Emergency Management Agency recommended removing every tree that was tall enough to hit the house, but few homeowners – or arborists – will go along with that program.

What about the “edge effect”? Just as removing a branch exposes other branches to increased stresses, the nearby trees will no longer have that big one near the house sharing the wind with them, and so they will be more vulnerable. They have developed enough girth to stand, but they



Heading these storm-damaged oak branches to nodes instead of reducing them to laterals lessened decay, sunscald, imbalance, food loss – and risk. Image recorded one year after heading.

are not used to standing on their own. It will take years for them to add enough trunk tissue to make them stable, and the perfect storm may arrive in the interim. So in some cases, mitigating the risk from that big tree by pruning and root invigoration may make the house safer than removing it entirely.

Bad stubs

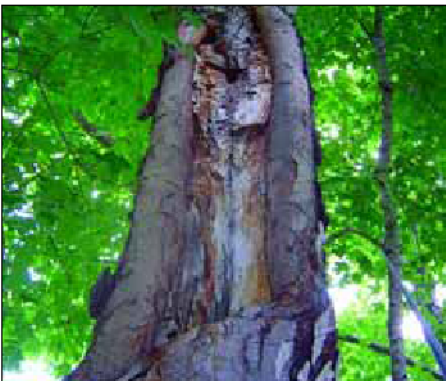
Even in 2005, many trees are topped to reduce the perception of risk. Topping cuts are made at locations predetermined by humans. They often leave stubs between branch nodes, which decay rapidly and do not close. They force the tree to respond with weakly attached sprouts, so many topping jobs increase the risk that they were intended to reduce. On normal pruning for branch removal, leaving a stub outside the branch collar creates a barrier to wound closure and a food source for decay organisms. If a tree hangs over the road enough to concern motorists, first look for a lateral with a natural target such as a branch collar. Poor regrowth from decaying wood at topping cuts and large internodal stubs will create a greater risk.



Codominant tear-out wound on ash – poor closure, decay extends downward, cracking: remove tree.

Good stubs

When trees lose major portions of their canopies to storms, following the standard rule by cutting broken branches back to their origin or a major lateral can increase risk. Larger wounds are more likely to decay than smaller ones. Bark that is suddenly exposed to the sun can be “scalded.” By making the tree more lopsided, we make it less stable. Removing entire limbs because their ends are broken results in less photosynthetic area, thus less food for the tree. Leaving good stubs at nodes can lessen decay, sunscald, imbalance, food loss – and risk. Storm-damaged branches often can be cleaned back to stubs at the first good node, where there is a branch protection zone and dormant buds to carry on good growth.



Codominant tear-out wound on sugar maple – woundwood added may be 40 percent stronger than normal wood. Risk very low; little action needed.

Bad rips

When co-dominant stems and branches fail, the injury can extend far beyond the original defect, often catastrophically. This is why it’s so important to identify and mitigate these defects ahead of time – by cabling, bracing, subordinating or thinning. One co-dominant can be removed safely if it is small enough for the wound to close. If not, reducing it until it is no more than a side branch – “subordinating” it – can be a permanent mitigation of the risk of failure. Co-dominant tear-outs in older trees are, of course, slower to seal over. When the wounds are exposed to the sun and rain, callus tissue is slower to form, since more of its waxy suberin (which provides a waterproof coating) can be dissolved. Straighter-grained species such as pine and ash are more likely to have bigger wounds from co-dominant failure, and these wounds are more likely to crack and fail than cross-grained species such as maple and sweetgum.

Repaired rips

If a tree responds to a co-dominant tear-out with good woundwood formation, this must be factored into the strength-loss assessment. Woundwood has been measured to be 40 percent stronger than normal wood. Necessary mitigation steps are often limited to cleaning out debris that has been caught in the bottom of the wound, trimming the jagged wood and “tracing” the loose or jagged bark. The goal is to minimize the “pocket” that catches water and infectious material, speeding closure. Depending on weight and wind exposure, light thinning or reduction cuts at the branch ends to lessen strain on the defect may be advisable, to further mitigate the risk.

The first thing property owners are concerned about is safety, and understandably so. Each person has their own definitions of how much tree risk is acceptable, depending on how much they value the tree, what condition the tree is in, and how much they value the nearby target. Risk management is a straightforward way to advertise, prioritize, and sell tree care services. It all starts with inspection and assessment of trees, best done on a regular

basis. Basic references, such as the book (*Evaluating Tree Defects: A Field Guide WE SELL IT*) and TCIA’s VIDEO on “Hazard Tree Risk Assessment & Mitigation for Tree Workers,” outline ways to systematically inspect trees. The US Forest Service also has a manual on “Urban Tree Risk Management,” free for the downloading at www.na.fs.fed.us/spfo/pubs/uf/utrrmm/

Armed with basic knowledge and their own experience and common sense, inspectors can adopt the owner’s mindset on acceptable levels of risk and deliver a tree care program that mitigates risk while increasing the tree resource. In essence, tree risk management and plant health care are really the same thing. Inspection and monitoring take vigilance. Responding to tree health and safety issues requires action. For the arborist and the owner to both accept that risk is a fact of life, that you cannot mitigate that risk by tree removal alone, requires bravery. The words of Patrick Henry again apply to tree care: “We are not weak if we make a proper use of those means which the God of Nature has placed in our power ... the battle, sir, is not to the strong alone. It is to the vigilant, the active, the brave.”

Guy Meilleur is with Better Tree Care in New Hill, N.C. He will be presenting a discussion on this same subject, Tree Risk Assessment & Mitigation, at TCI EXPO in Columbus, Ohio, on Nov. 10.



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