

# Tree Appraisal/Hazard Tree Issues

This month's issue of *Arboricultural Consultant* features the last in a series of theme articles for 2001. Each month a different theme has been discussed through the proposal of questions followed by responses from ASCA members.

The theme for this issue, "**Tree Appraisal / Hazard Tree Issues**", poses scenarios in which a consulting arborist would be called upon to render an appraisal and how he/she would handle various case situations.

Following are the questions which were posed to members and responses to those questions.

When performing an appraisal, the consultant must determine the percentage rating for "Condition" as part of the appraisal. The structural integrity of the tree should be considered in this rating. Because the consultant cannot always determine the amount of decay (if any) in the interior, should the center of the tree be examined through the use of a Resistograph or similar tool? If the interior of the tree is decayed, it will certainly lower the "Condition" rating.

## Russ Carlson, RCA#354

There are non-invasive techniques (Mattheck's VTA, for one) that allow the appraiser to estimate the condition. Drilling or sonic techniques for decay detection can be costly, and cause some injury to the tree in most cases. They should be used only when there is some indication that these methods are really necessary. When explaining the methods in a report (oral or written), the limitations should be stated, and in this case, it would include indicating that structural integrity was assessed by visual means only, not by invasive testing procedures.

## Scott Cullen, RCA#348

There is no hard and fast rule. The same considerations, by the way, would apply to sub-surface investigation or climbing inspections. The first issue is the definition of the assignment, which may specifically be limited to an estimate of monetary value based either on visible conditions or the input of other experts. There is no presumption that the appraiser is always acting in a tree management role and so there is no blanket duty to act that way. The next issue is the purpose and use of the appraisal. As an example, mass tree inventories are or should by definition be brief, visual observations but often include a Condition rating and an estimate of value. There is no duty to perform detailed inspection. Other appraisals may presume that more detailed information will be developed, but that is a case by case variable. From a practice management perspective, the appraiser has no duty to perform services, like drilling, that were not contracted for. Certainly, the appraiser should recommend sub-

sequent, detailed risk assessment if observed conditions seems to warrant it and any opinion of value should be conditioned on the level of investigation that was actually performed. There is no uniform standard of care in terms of risk assessment procedures. There are many professionals who rely on instruments, like the Resistograph, but there are professionals who feel that drilling results are not always definitive or that Visual Tree Assessment (VTA) is just as reliable.

## David Hucker, RCA#388

First, I would not probe the interior of an apparently healthy tree without some reason to believe there may be internal decay. Reasons to perform an invasive inspection could include age, species, site factors, or visible external wounding. Secondly, it has been well researched and documented that a tree may contain internal decay that does not adversely affect its structural integrity. The amount of permissible decay and the resulting affect on a tree's structure continues to be debated.

## Walter H. Knapp

The consultant must evaluate the Condition of the tree to the extent needed to meet a Standard of Care -- defined in the Standards of Professional Practice as "what another reasonably prudent Professional would do under the same or similar circumstances." In most situations, the Standard of Care is somewhat subjective, but there are a number of factors that apply in this case. First, if there is advanced decay or other internal defects, the tree could be classed as hazardous. If so, the tree actually has a negative value (liability, removal cost, etc.). Second, even if decay

and defects are minor, appraisal values will be reduced, perhaps substantially in high value trees. In addition, the useful life of the tree could be reduced. Third, any appraisal should be made with the assumption that litigation will ensue. This implies a higher degree of rigor in data collection, analysis, and reporting. I conclude that, if possible, the interior of the tree should be examined in any appraisal. The question of which tool to use is a separate subject.

## John M. Lichter, RCA#375

If there is no evidence (or "body language") to suggest that decay is present in the interior, I would not utilize a resistograph, drill, etc. to determine the amount of decayed and sound wood in the trunk. However, if there was evidence of decay (ie. conks, bulges, etc.) I would perform this examination and include the results of such in my description and rating of condition. In some cases it may not be possible to perform this type of inspection (for example, if the tree isn't owned by your client) and in those cases, I would identify what was asked of you and what you could not do in your assignment and limits of your assignment.

## Tom Mugridge, RCA#306

I offer the investigation of the interior of the tree as an additional service available to the client. Unless there is an outward indication of the possibility of decay (i.e., ants depositing sawdust outside the tree), I generally do not suspect a reason to do some invasive investigating via drilling. If dealing with a tree species known to be prone to decay, I would suggest further examination and the reasoning behind it, and leave it up

to the client to decide. In any event, one must include a disclaimer that not all defects can be determined, and that there is always an inherent risk involved.

#### Jack Radecki, RCA#342

Many mature trees have decay or a cavity in the interior of a stem, especially those with heartwood. The structural integrity only becomes compromised when the exterior walls are too thin. (e.g. 15% for hazard species and 30% for non-hazard species are rules of thumb) I look for indications from the tree to determine the relation of decay to hazard rating. These can be external symptoms such as pocket cavities, shoot growth, signs of previous storm damage, lean of the tree, and root collar examination to name a few. The presence of a target will also influence the need for external examination. Experience always helps in identifying this need. Therefore the need for internal examination can only be determined by an experienced arborist. I have found that using a long 1/8 inch drill bit has been a lot cheaper than buying a resistograph, ultrasound or shigometer.

#### Marty Shaw

No. No one test can definitively determine the amount and extent of decay in a tree. For example, there may be a point high in the tree trunk where a previous limb failure may or may not have caused decay. A measurement at the base would not necessarily detect this decay. Would we require that all such limbs be measured? At how many points along the trunk would the measurements have to be taken to "be sure" the tree was safe from decay. The cost of the evaluation could easily exceed the value of the tree. What tree could be evaluated without exceeding the value of the tree? Decay detection should only be administered if there are signs/symptoms that warrant additional exploration. Additionally, only the outer 1/3 of the trunk wood is important to stability and structure while 2/3 of the heartwood provides little or no structural support to the tree- it just isn't that critical to the overall condition of the tree. If these signs/symptoms do not exist, there should be an assumption that the heartwood is free of decay.

#### Don Zimar

If the consultant does not perform any testing and relies upon visual inspection, he should qualify his appraisal accordingly. I frequently add a statement such as: "This appraisal is based on visual inspection of the tree. Identification of defects or diseases not readily apparent or other information not available at the time of inspection may affect the outcome of this evaluation." This is particularly important if someone else owns the tree, since most tests to identify the extent of decay are destructive in nature. That is, the tests themselves cause additional, irreparable damage to the tree. The owner may even want to forego the additional potential for damage caused by drilling. As techniques improve we should use them as much as possible to improve the accuracy of our conclusions.

**When called by a client to perform an appraisal on a tree that has been removed, it can become very complex. Sometimes the stump has been removed and there are no pictures of what the tree looked like before the removal. In some instances, there are no adjacent trees and the property owner has no idea what the species of the tree was - just that it was "large." All evidence of what had formerly been on the site has been removed. In such a case, how can the value of such a tree be established?**

#### Russ Carlson, RCA#354

Appraising the value of a tree that is no longer in existence is a very tricky process. The word 'forensics' comes to mind. You are trying to reconstruct an object from available evidence, and some evidence may be missing.

Start with what information is known. Ask for photos, videos or anything that might show the tree, even just a part of it. Talk to as many people as you can find that were familiar with the tree and the site- friends, neighbors, relatives, other businesses. Find out who may have worked on the tree or on the property. These are all sources of information. Take all this information together, and decide how you want to approach the appraisal, and which method will be used. Without hard evidence about the tree itself, Trunk Formula might not be a good way to go. Will some other approach or method be better suited?

#### Scott Cullen, RCA#348

If there is no physical evidence at all and the appraiser is relying entirely on verbal descriptions and recollections, the appraiser must report all limitations according to Sections 4.1(D) and 4.2(E-G) of the ASCA SPP. Any such appraisal would rely heavily on personal interviews rather than direct observation or measurement. Sources might include the client, neighbors, previous owners or contractors or anyone with a recollection of the tree. Questions might include things like "... from here did the tree obscure the cell tower..." or "...did the tree have showy flowers?" The idea is to quantify the benefits that the tree provided. Benefits are perceptions and people can recall their perceptions. A great deal of judgment is involved in how much confidence to assign to such perceptions. This question describes the extreme case. In many cases there may be at least some supporting evidence to support or dispute verbal descriptions.

#### Walter H. Knapp

Appraisal of missing trees calls for detective work.

- Are there really no photographs of the tree? Perhaps family pictures that by chance have the tree in the background? Sometimes we just have to dig deeper!
- Aerial photographs are available for virtually every area in the country. We could obtain the most recent large scale aerial photographs. A photo interpreter can often determine tree species, height, and to some extent, diameter. The appraiser could call in a second expert (a photo interpreter) to make these determinations, which could then be used in the appraisal.

When called by a client to perform an appraisal on a tree that has been removed, it can become very complex. Sometimes the stump has been removed and there are no pictures of what the tree looked like before the removal. In some instances, there are no adjacent trees and the property owner has no idea what the species of the tree was - just that it was "large." All evidence of what had formerly been on the site has been removed. In such a case, how can the value of such a tree be established?

**John M. Lichter, RCA#375**

The value cannot be established with any accuracy. An arborist could generate hypothetical examples of tree values, but that this was done should be clearly identified in the assignment.

**Tom Mugridge, RCA#306**

If a tree company removed the tree, I would start by asking them. They may even be able to give a rough idea of its condition, but would have to be able to attest to all of this with credibility. If the tree had been under their care, or someone else's, I would check with them for pertinent info.

Barring these avenues, one would have to look for other witnesses (previous owner, neighbor, e.g.) who might be able to identify what type of tree it was. Also, if the current owner could be shown other trees to compare theirs to, they may be able to come up with the right tree, including a comparable size. It's from this point on that you have to earn your fee!

Otherwise, without the needed information, it's impossible to value the tree.

**Jack Radecki, RCA#342**

This 'large' tree may have left some evidence. If the stump was ground I would look for remaining buttrous roots or anchor roots. If the stump was removed by a backhoe I would still look for remaining roots and their size in relation from the distance of the removed stump. Finally, I would look throughout the active growing area for signs of roots to try to determine the species of tree and the size of the roots. Failing this I would encourage the plaintiff to claim for an average size of a large tree which can be determined from the geographical area.

**Marty Shaw**

Investigation should be conducted on the basis of witnesses, i.e. the person that ground the stump, the crew that removed the tree, the tree's owner and previous owners, etc.

**Don Zimar**

This is certainly a challenge. The only solution that comes to my mind is to contact as many people as possible who might have witnessed that the tree did in fact exist at one time. Prepare a set of questions that will give clues to the species size and condition. Also ask if they know of anyone else who may have seen the tree. Someone removed the tree and stump. If they are cooperative, much could be gained by their testimony and/or paperwork. If not, the client's attorney may have to subpoena them to get the information. Keep in mind that the burden of proof differs for the plaintive and defendant and in regard to civil versus penal cases, etc. Therefore, level of certainty to be obtained and confidence in the conclusions may also differ. Finally, I doubt the tree could be removed without a trace. Some digging would likely turn up some remnants of the root system. These could be used to at least identify the species and prove a tree existed.



A large pine tree has an obvious decayed area in the main trunk that causes it to be a hazard tree. The tree stands in a park near a gazebo where numerous residents congregate. The tree has historical significance to the community and the community does not want to remove the tree. They ask that you come up with alternatives to preserve the tree. How would a tree consultant handle this situation?

**Russ Carlson, RCA#354**

Historical trees are difficult issues. People are emotionally attached, and often reluctant to listen to logic and sound advice. Start from the premise that it's just another old tree. If it is at risk of failure, what are the targets and their value? Then do a little brainstorming for ideas to preserve the tree in a safe manner. Let your imagination run wild. Someone did this once, and the Balmville tree resulted.

The key point to remember is that as an arborist and consultant, you DO NOT MAKE DECISIONS. You present options and alternatives. Give the decision makers the information they need, and let them make the decision. You can certainly prioritize and express your opinion of the best alternatives, but if they ask for other methods, be prepared to offer some.

**Scott Cullen, RCA#348**

The determination of hazard is properly made by a competent expert. Decisions of the "reasonableness" of or tolerance of risk or of the cost effectiveness of alternative hazard or risk mitigation strategies are properly made by owners. The first issue for the consultant is Competence. An appraiser might point out an apparent hazard (relationship between risk of failure and target) but not be competent to make a final determination of risk or to suggest mitigation strategies. But suggesting alternatives, ranging from moving the target to crown reduction to mechanical support, is entirely proper for the competent expert. Any limitations in the reliability of suggested alternatives would of course have to be reported. A consultant who is uncomfortable with such an assignment, for instance believing there will be no effective mitigation measure, has no obligation to accept it.

**David Hucker, RCA#388**

Professionals in hazard tree management have clearly stated that there are two methods that would address this scenario. Either remove the tree or mechanically alter it so it becomes acceptably stable (prune, cable, bolt, prop, etc.) or remove the target. I have spent hours contemplating the possible surgery of a high-value tree while forgetting the concept that maybe the gazebo could be moved!

**John M. Lichter, RCA#375**

I think the client and community should be educated as to what a "hazard tree" is (any tree is hazardous to some degree) and what type of risk it poses to the community. Additionally, the limitations the arborist faces when providing a hazard or risk assessment rating should be communicated as well as any treatments which may reduce the likelihood of tree failure or injury and property damage (move the gazebo?).

**Tom Mugridge, RCA#306**

My first recommendation to the authorities would be to remove the tree. This way, you've covered yourself. If they choose a different path, see if the area can be isolated from easy entry (fencing, i.e.), and post the area that a known hazard tree is within. Move the gazebo, too. Then, make recommendations on caring for the tree as you normally would, based on the situation.

**Jack Radecki, RCA#342**

This tree of historical significance may warrant the moving of the gazebo. If that is possible, a barrier can be erected around the hazard zone of the tree with appropriate signage. I would certainly want to verify that this tree is a hazard in any event. The problem with this is that nobody can guarantee a tree against failure. However, the recommendations of qualified arborists would be most valued.

**Marty Shaw**

Remove the tree or the targets. It is important that the public be aware of the danger. I would recommend relocating the gazebo to a safe location and fencing off the target area where the tree might fall. Signage should be posted.

**Don Zimar**

Assuming a comprehensive analysis of the decay was done to justify deeming the tree a hazard, the first thing I would do is see if all targets could be removed from the target zone around the tree and visitors could be restricted with fencing and signs. This would be the simplest solution. If the gazebo had to stay and people must continue to frequent the area, I would then inform the client that preserving the tree will require far more expertise than I alone can provide. I have been involved in a number of situations where clients were given a false sense of security by the installation of a couple of cables or guys by well intentioned arborists that in reality offer no level of protection or improvement in safety whatsoever, or even made the situation worse. The vector forces involved in guying trees are complicated. Therefore, I would first provide a budget that estimates hours for myself, an architect specializing in historic preservation, and a structural engineer who has worked on freestanding structural supports. Frequently the costs associated with preserving the tree will make the owners reconsider. Unfortunately, the goal must be to reduce the risk of this tree failing to below the risk associated with a healthy non-decayed white pine. If this tree fails, my insurance better be paid up. On a side note, while the community owns the tree, there is likely some governing body responsible for the maintenance of a public park; they should be in the loop and may be able to act rationally to remove the tree if the health and safety of the park users cannot be maintained.

A company had to connect a new development with a water system. The easiest way and most direct way was to cross a property and connect the pipes. The property in between did not belong to the developer. The contractor trenched across the property anyway. In the process, the contractor removed all trees in a 30' x 250' area. The owner of the property engages the tree consultant to appraise the destroyed trees. What is the best method to approach this problem? How would you know what trees were destroyed since all were removed, stumps too?

**Russ Carlson, RCA#354**

In most cases such as this there are areas similar to the damaged area that were not affected. Use a sampling technique (described in the Guide and the Cost-of-Cure folder) to estimate the components of the damaged area. Rely on any photos or other information available. As with question #2 above, proceed with caution, and use all available information you can collect. Don't guess- be as accurate as possible, and state the limitations of the appraisal.

**Scott Cullen, RCA#348**

The first issue is to confirm or determine the nature of the damaged property owner's rights. If there was an easement in favor of the developed property, then the owner's rights and the value of damages may be limited. Such initial determinations are required by the Uniform Standards of Professional Appraisal Practice (USPAP) and strongly suggested by Chapter 11 of the 9th Edition Guide for Plant Appraisal. There may be no real benefit in preparing an appraisal if the rights were significantly limited. See SPP Section 4.3(F)(ii). If the owner desires an appraisal in any case or if the rights are subject to legal determination the appraiser may properly proceed. If physical evidence is limited the situation is similar to question 2.

**Walter H. Knapp**

Again, aerial photographs can be used to determine tree characteristics. In addition to the species, height, and diameter, the number of trees can often be estimated directly from the photos. A second method is to "cruise" adjacent or nearby areas. The aerial photographs can be used to evaluate the similarity of tree types ("type mapping"). A statistically valid sample of trees on the similar area(s) can then be used to estimate tree characteristics for the area where the trees were destroyed. This is basic forestry work, and it would be a good idea to involve an expert in cruising and sampling.

**John M. Lichter, RCA#375**

If photographs or any type of inventory of the trees were available, this could be used to "re-create" the site. Certainly interviewing property owners, managers would be helpful (Was it planted? When? How was it maintained?). One could look at surrounding vegetation and the site (especially if it was a native landscape) and assume it was similar to this. Sounds like a cost of cure approach to restore the property could be an appropriate method to utilize for an appraisal.

**Tom Mugridge, RCA#306**

If there are any trees remaining that are a good representative example of the trees that were removed, I would survey an equal-sized area, calculate the value of those trees, and use this for my value of the removed trees. If an area smaller than the area that was cleared is available, then I would survey that area, calculate what percentage it represents of the original area, and then do some extrapolating from there.

If the entire area has been cleared and no representative example remains, then I would try to determine what was on-site by visiting other wooded sites with the homeowner in hopes of finding something comparable by which to calculate.

**Jack Radecki, RCA#342**

This sounds like a case for 'Cost of Cure'. I would try to restore the site to a reasonable precasualty condition. Smaller trees may have to be planted to include maintenance costs for a minimum of 3 years. As stated in The Guide for Plant Appraisal - 9th edition - chapter 9, I would seek out the proof of loss especially in the form of photographs and differences in real estate appraisals.

**Marty Shaw**

All destroyed trees must be included in the appraisal. Since it is not possible to determine the trees that were removed, two areas of identical size immediately adjacent to the destroyed zone would be measured and evaluated. The value would be the average of value of the two adjoining plots with the same dimensions. Additional questions would need to be answered to definitively determine the value here:

What was the land being used for?

Were there any easements?

**Don Zimar**

First of all, there are many much larger issues involved in this scenario than the appraisal of the vegetation removed and destroyed, including how a developer could get the permits for a development without easements for utilities. This developer's you-know-what is hanging out all over the place. This client should first be instructed to hire a good attorney, if they hadn't already. The arborist should then work with the attorney and forego any action until instructed to do so by the attorney. It is likely this case would settle for much more than the value of the plant material or the cost to cure the damage alone. If the attorney decided a value was necessary, the arborist must then try to piece together what the property looked like prior to the clearing. If it was a wooded natural area and the adjacent property is uncleared, a similar tract of equal size could be used to estimate the species, sizes and conditions of plant material that existed prior to clearing. If it was a landscape area, the remaining landscape could be used to estimate age(size), condition, and other factors. Quantities and species would require interviewing people familiar with the property including the production of any photos prior to clearing. Gardeners, landscape contractors, tree companies, and others who frequented the property could help verify the owner's recollection of what was there. Again, someone removed the tree. Their testimony could also be useful, if available. This information could then be used to apply replacement, formula, or cost of cure procedures to determine a value for the removed vegetation.