



## Q&A: Tree Risk Assessment

**A property owner has a specimen tree, which is the centerpiece of their estate, and is located near the house. The tree has good form and structure, but has symptoms of decline, including a live crown ratio of 10%. Two consulting arborists evaluated the tree independently and recommend that it be removed because of extensive decay in the buttress roots. When the tree was removed it was dormant and appeared normal to the tree company. During the removal, staff from the tree company may have made comments to the property owner that suggested the tree was in good health. The property owner now has doubts about the arborist's report, and their decision to remove it.**

- **What steps would you take to help the client understand that your evaluation used sound arboricultural principles and judgments in evaluating the tree?**
- **If I'm certain that the tree company provided the client with misinformation about the health of the tree should I confront the owner or just never recommend that firm in the future?**

*I would talk to client about the live crown ratio of 10% and how that relates to the tree's ability to make photosynthates to nourish the tree's biological system. I would talk to the client about the serious loss of anchoring roots and the instruments and time involved assessing root*

*loss, and lack of anchoring capacity. I would also discuss with the client how two independent Consulting Arborists came up with the same conclusion. This is the greatest convincing argument for removal. In addition, I would emphasize the difficulty making such a decision with such a beautiful specimen, but all living things have a life cycle and this tree had come to the end of its cycle. It was time to remove instead of experiencing a potentially catastrophic failure.*

*I would talk to the contractor and tell him that everyone is entitled to their opinion. I would explain that as a Consulting Arborist we are at the highest level of competence in our industry. When making these types of difficult decisions, that are very sensitive, it is important that if he has a detracting statement to make, that he should keep it to himself. There was nothing productive accomplished by making this statement. There were two Consulting Arborists that independently came up with the same conclusion. Do not hire again.*

—Mark Crane

*I am not sure what my assignment is, and the tree is gone. So my evaluation would have to be based on the two existing reports.*

*I would help my client understand that my evaluation used sound principles by using industry standard practices, citing the works and authors, and comparing them with what the two consultants provided*

*in their reports. Hopefully the consultants know that live crown ratio does not refer to the percentage of the crown that is alive, but to the height of the living crown as a proportion of the height of the entire tree. A ten percent live crown ratio would not leave a viable tree for most species of deciduous tree (the text indicates the tree is deciduous). If the live crown was 10% and decay were present in the buttress roots, it would in effect leave one giant single-stem Lion's tail; all the weight at the end with not enough to hold it at the base and very prone to failure.*

*While I may be certain that the company provided the client with misinformation about the tree, I cannot be certain if they did it through malfeasance or ignorance. As they did in fact get the removal job they were hired to do, I can't see a reason for the former. As it is likely the latter, I would use it as an opportunity to establish market differentiation for the client, and to explain the value in retaining a consultant versus someone without the knowledge, skills, and abilities of a consultant. The fact that the firm could not properly assess what they were looking at is the best reason for retaining me.*

—Michael Galvin, RCA #432

*If the client still has artifacts of the buttress roots (such as firewood), I would indeed use these as teachable mementoes of the advanced decay.*

*I have had experiences like this, and usually do proactively arrange to have the*

Q & A continued

tree company keep what they feel are some decent examples of root rot, or whatever. Then a bit of explanation goes a long way. To talk with the tree owner about rot is one thing, but to show an actual spongy tissue, near a seemingly un-affected piece, is quite instructive. I have done this, explaining that hyphae is invisible, yet colonizes tree cells, eventually making them useless for transport and storage.

I once had a case where I recommended a large Douglas fir (*Pseudotsuga menziesii*) be felled due to presence of two smallish *Ganoderma* fruiting bodies. Later, the tree expert who felled it told the owner and anyone else who was willing to listen that the tree was unnecessarily killed. He had found—in his cursory visual examination of the stump—no evidence of rot except a tiny bit on the surface.

I confronted him when I heard that this was being promulgated, and asked (politely considering the circumstances) if he had used a microscope to examine the base for hyphae. I also asked at what point a tree of this magnitude (it was around 30" DBH and very close to many neighboring homes) is still safe to climb. I informed him that these were two things I consider on each case where I recommend felling/removal of a tree. I have climbed for thirty years, I continued, and many times I have found myself climbing something a crane could not reach, that was for all intents ridiculously unsafe. I did it because, in my day, that is what everyone did. We used testosterone where good sense failed.

But, I continued, this is not what I expect of the current generation of arborists, or myself. I use the maxim that I would never send a climber up a tree I would not climb myself. And a 30-inch Doug fir with a butt rot? I ain't going there.

All this could have been avoided had I

arranged for the owner to introduce me to the tree expert who did the work.

—John O'Shea

As background, over the last several years the term "hazard tree assessment" has generally been replaced by "tree risk assessment" and this is the term of art used in ANSI A300 (Part 9)-2011 and its companion ISA Best Management Practices (BMP), 2011.

It is not clear to me how a tree with a 10% live crown ratio can be either a "specimen" or of "good form," but I suppose that's subjective. Let's assume the tree was "in decline." Let's also assume you are one of the two consulting arborists who recommended removal and you recommended the tree removal contractor.

To answer the first question, you would simply explain to the client that tree health and structure are separate issues. You could show the client page five in the BMP. Two consulting arborists independently recommended removal because of structural issues and resulting risk. If the stump was not removed you might point out the extensive decay in the buttress roots. You might ask the other consultant to join you. You might also explain why in your opinion the tree was not in "good health," but tree health was not the real issue leading to your recommendation.

The second question is not about tree risk assessment. It is a practice management question. Confrontation is seldom a good management practice. You say staff from the tree company may have made comments. You should confirm with the client what was said and by whom. Maybe the client misinterpreted what was said. You might take the opportunity to educate the tree company owner about the difference between health and structure or ask the tree company owner to be more careful about staff commenting on your recommendations. If this company is not doing

good work or providing good value, you might stop recommending them.

—Scott Cullen, RCA #348

To help the client understand why we came to the conclusions we did I would show the client on the remaining stump what kind of decay was inhabiting the phloem tissue and explain again (even though the report would have explained it) the significance of the decay. I would have explained why the decay would have extended down into the roots and why an otherwise healthy appearing sound wood center in the tree does not necessarily make the tree safe from failure.

I would have explained that a healthy looking upper canopy does not prevent a decayed root collar from allowing failure.

If the company that removed the tree provided misinformation about the health of the tree, I would consider that unethical and more an attempt to belittle the author of the report than be informative. It's, of course, possible that the company that removed the tree was merely ignorant of the significance of the decayed tissue.

In either case I would not recommend the firm in the future.

—Barrie D. Coate, RCA #237

Considering the rampant incompetence that pervades our society, and the particularly egregious misinformation available to consumers via the tree industry, it is normal, natural and good that people will have doubts regarding anything they are told about their trees. A report produced by an arboricultural consultant should contain substantive elements that prove the consultant's conclusions, and the report should be written so that it can be easily understood by the client. To enhance credibility, I always try to reference credible sources so that any opinion or conclusion that I present to a client is

Q & A continued

based on what other experts have said, and not simply on my own word, belief or work. I also try impress upon the client that reliability is a function of many factors—that the credibility of a person has much to do with the knowledge and experience that one has acquired over long periods of time. By comparing the quality of reports that are presented, the credibility issue can usually be ferreted out. Careful examination of the consultants' reports is required to determine credibility. If you place greater weight on facts that can be independently and objectively substantiated, one report ought to be more reliable than a report that makes judgments based solely on an unqualified belief. If comparing what an individual says verbally to what a consultant says in a well written and documented report, the difference in credibility should be so obvious as to remove any doubt. Unfortunately, sometimes people are not reasonable, and human beings are capable of choosing to believe what they want to believe—reasonable or not. It is not my place to correct them.

Unless it was part of the assignment, I'm sure I would not have recommended anyone to do the work—if assigned to make a recommendation, I would have recommended at least three different companies. In any case, a "tree feller" is entitled to his/her opinion— who am I to correct them (unless, of course, I'm assigned and paid to do it).

—Martin A. Shaw, RCA #470

As written, the scenario says 10% live crown ratio. This means the live crown of the tree occupies only 10% of the tree's height, and usually indicates the live portion is at the top (some may interpret this differently). I would question whether this tree can still be considered a specimen tree at all.

If the live portion of the crown is at the top, the tree is probably at risk of trunk

failure due to poor taper and top weight. If the live portion is not at the top of the tree, this indicates severe dieback of the crown and decline of the tree.

The scenario is not uncommon, and pits arborist against arborist, opinion against opinion. For the owner's benefit, the reasoning and rationale of the three "experts" should be carefully considered. The best option may be a meeting of all four parties to discuss the situation. Next best is to review why each party made their particular recommendations. This should not be allowed to deteriorate to a matter of questioning credentials. It is about the criteria used to evaluate the tree, and the levels of risk tolerance each arborist is suggesting.

Confronting the tree service connotes an adversarial approach. It might be well to frankly discuss the situation, and what occurred, however. It is probably the result of inadequate training of the field personnel about what constitutes risk and how it should be evaluated. Make it a teaching opportunity.

—Russell E. Carlson, RCA #354

There is no mention of how the observations and judgments were reported to the client. A quality report would provide sufficient description of method and justification for opinions. Even if results were only communicated verbally, sufficient justification for opinions should have been provided. If not, then keeping in mind that both the other arborists are entitled to an opinion, and as are you, independently of them, provide support information for your reported opinions. Beyond that... the management decision, and the weight to give to each opinion, is the responsibility (and burden) of the client.

Not mentioned was how the information was obtained, but apparently not through the client. If the client is willing to share information provided by the tree service

arborist, addressing it on a point-by-point basis may be appropriate. However, stick to the facts rather than the performance of the other arborist. Focusing on justification for your opinions rather than discounting the opposition's is a much stronger and more persuasive approach to take. What the client does with the information, or misinformation, at hand is outside of your control. Ultimately, the client's decision and the outcome of the situation is typically not your responsibility or assignment.

—Torrey Young, RCA #282

**An arborist evaluated a large tree that has multiple targets within the drip-line that cannot be relocated. One of the assignments was to perform a root collar evaluation and examine the condition of the buttress roots. The tree is massive and has 15 buttress roots. Through a physical examination and selective drilling, the arborist determined there is significant decay in the first 6 roots examined, and more decay is suspected.**

- **If 6 roots (40%) have advanced decay should the arborist stop the evaluation and recommend tree removal, or evaluate the structure of the remaining 9 roots?**
- **What threshold should the arborist use to condemn a tree when significant decay is found in multiple buttress roots?**

To answer your first question, if the arborist has reached the conclusion, based on the partial assessment, that the tree should be removed it is probably not necessary to continue the assessment. If this is a time and material assignment it might not be ethical to continue to charge for unnecessary services. If, on the other hand, the arborist cannot reach a conclusion based on the partial assessment, the structural evaluation should be continued.

Q & A continued

To answer your second question, the arborist should recommend removal when the combination of risk of failure and the likely consequences of failure are such that the arborist's conclusion is that that is the best course of action. It is not clear to me that a proportion of decayed roots alone provides a threshold for action or a meaningful basis to form a conclusion. In this case, for example, you describe targets within the dripline, but you do not describe crown spread, first branch height, tree height or other targets outside the dripline. If the tree were to fail at the base in the most likely direction(s) is it likely to impact those targets or miss them? Are there risk mitigation options other than tree removal?

—Scott Cullen, RCA #348

If 6 roots have advanced decay that may or may not be reason for removal of the tree depending on the orientation of those 6 roots. I would certainly evaluate buttress roots on all sides of the trunk to determine where the weakest portion of the buttress root system is and to provide a more thorough analysis of the hazard.

The threshold used to condemn a tree when significant decay is found should be based on the relative location of the decayed roots.

If all the decayed roots are on one side of the tree the implication is that the tree would/could fall in the opposite direction through lack of structural support on one side. However, if decayed roots are evenly distributed around the tree, while remaining roots are healthy and normal and evenly distributed, that presents an entirely different level of hazard and the decision making process would be very different.

—Barrie D. Coate, RCA #237

A recommendation for this assignment would require thorough examination

and detailed observations, with some testing and analysis to determine what the anchoring capacity of the remaining roots are. It might be a good idea to perform some soil analysis, and a pull test in high soil moisture conditions, to see if the remaining healthy roots are strong enough to keep the tree upright in appropriate wind conditions when the soil is wet. It may also be wise to consult "The Body Language of Trees" and "Landscape Below Ground" to get an idea of the type of failure patterns/problems that are associated with the remaining healthy root structure.

Each situation is unique and each requires individual risk analysis. There just isn't enough evidence out there in the world to say how much is too much decay in the roots or to say how much risk is too much for a particular tree owner. Judgment would play heavily into any decision regarding this tree, and the owner of the tree would have to make the call as to how much risk they are willing to take. I believe the more information you have about a particular situation, the better the decision will be. In a situation like this (where the uncertainty is high), I would probably recommend that the owner get more than one reliable opinion and to seek a consensus.

—Martin A. Shaw, RCA #470

As with many scenarios, this one seeks a single solution, when there may be several alternatives. We do not (yet) know the causal agent of the decay, or the overall condition of the tree. We don't know other relevant aspects, such as wind exposure, type and value of targets, etc.

A loss of 40% of the root collar is close to being critical, or maybe already beyond it. As with the first scenario, discussion with the owner/manager is necessary to determine the best course of action. If tolerance of risk is low, maybe a decision to remove will be in order. If the desire to

preserve the tree, at least for a while longer, is very high, then more information is needed to assess the level of risk actually posed. In this case, internal decay detection of the lower trunk might offer some insight, as well as further excavation of roots. Excavating roots on the opposite side of the tree might indicate the extent of root loss more easily than continuing circumferentially.

A consultant is expected to analyze a situation, and offer opinions on the courses of action. This may include making recommendations for treatments and assisting with the decision-making process. While the owner reserves the right to the final decision, the consultant has a duty to protect the client's best interests, and that includes warning of safety risks when appropriate.

—Russell E. Carlson, RCA #354

That decision cannot be responsibly made with the information provided. 40% of the visible supporting roots may not equate to 40% of the support system. "Drilling" is a non-specific analytical technique. No information on the condition or character of the entire tree was provided. There is no formula that will provide the observational and analytical skills and judgment required to make such a determination. An arborist needs to do as much investigation as required, within the scope of the assignment, and provide an appropriately qualified and limited opinion based on what can be observed.

—Torrey Young, RCA #282

**I assessed two large date palms that flank a swimming pool. The palms are an integral part of the garden design. They are near the pool deck and an outdoor entertaining space, but are well away from the house. The palms are matched with 30' of clear trunk, and have full, robust crowns. But on**

Q & A *continued*

**one palm, at about 15', there is a trunk wound that has compromised about 30% of the trunk diameter. I can find little researched based information on assessing decay in palms.**

**• What approach should I use in evaluating the strength loss of this palm?**

*If you are unaware of research or guidance on assessing strength loss in palms and do not have sufficient experience with palms on which to base your assessment are you competent to have undertaken this assignment? You should obtain the assistance of another expert who is experienced with palms. See ASCA SPP (April, 2011) §1.1(E).*

—Scott Cullen, RCA #348

*Since palms respond to a trunk wound very differently than gymnosperms I would call a palm expert to evaluate the tree rather than make the decision myself.*

—Barrie D. Coate, RCA #237

*Palms respond to decay much differently than do other types of trees. Palm trees vary widely in density, and their outer circumference is harder than most hardwoods, but the inner wood is much softer. They are also quite a bit more elastic than other types of trees, and their anatomical structure is free from knots and similar defects. Because of these characteristics, I would allow for more central decay than I would for other tree types, depending on where the decay is located. Palms fracture in the middle with higher frequency, so I would also have to take that into consideration. I would allow a similar opening size to other types of trees. All situations are different and each would have to be assessed accordingly. Ultimately, the owner must decide how much risk they are willing to take.*

—Martin A. Shaw, RCA #470

*Palms are unique and do not respond to decay or external stresses like other woody plants (trees). Their trunks consist of relatively uniform vascular bundles, and do not include a lateral meristem (vascular cambium). Therefore, damage from any wounds, or decay, is permanent; the cavity will never close or be strengthened by new layers of tissue. Therefore, as the palm increases in height and leverage is increased, the role of any*

*stem weakness is enhanced. There is little strength loss data for palms and no formula applicable to the many variations between palm species. The opinion of rating risk requires judgment, as always. If in doubt as to your opinion, seek consult from competent peers and clearly disclose limitations (as always).*

—Torrey Young, RCA #282 🌿

## ASCA Invests in the Future

October 1, 2010 – September 20, 2011

The ASCA Board continued with the implementation of the 2009 Strategic Plan with an investment in developing additional educational programs. In addition, the Board continued the strong support of the marketing/branding program.

Listed here are the major areas of revenue and expenses by percentage of the whole.

