

# Evaluating & Working With High Risk Trees

By Scott D. Baker



**W**hen is it safe to climb and safe to cut? It is a tough decision to make and only one person can make that final decision. I have often observed that there is some question as to who actually makes the final decision on a big tree removal or pruning job in a tree of questionable health or condition. Is it the boss? Is it the salesperson? Is it the customer? No. The climber should make the critical decision. The removal of a large tree is a decision making process and, obviously, it involves more than one decision. Many decisions are made during a job and if you are like me, you have certainly been up in a tree and found yourself wondering if you should really be up there making the cut.

Every person on the site is potentially at risk during a large tree operation. Struck-by is still statistically the likeliest way to get hurt on a job site and it is important to remember that. I have seen a person break three ribs standing 50 feet away from a tree. A chunk of wood hit a slippery crotch, shot at him as if out of a gun, and struck him.

Customers love to watch and sometimes they try to help. Do not allow this to happen. Remember that watching you do your work, which people find fascinating and thrilling, is putting them at risk.

Here is an interesting scenario. The sales person sells a job and the boss tells the crew that it is a removal, a no-brainer, a crash down – no lowering and no problems. Here are the keys to the truck – go get to it. The crew arrives on the site expecting an easy job. Instead, they find a really nasty tree. What would you do in this situation? This is a touchy question because there is always a hierarchy on the job site. The boss is the boss and he writes the paycheck. The crew follows orders. Remember though, it's your life at stake.

When confronting a tree job, first identify – what is the job at hand? Is it pruning or removal? Are there notes on the work order? Some estimators are excellent evaluators of trees and if they sell a tough job there will be notes on the work order. Good companies have a system for describing the work that has been sold and there are many different systems that work. It may be that you have a verbal briefing in the morning or a bid sheet that is descriptive including notes. With a good system you should have no surprises when you get to the job site. You know what type of job you will be looking at.

There are some questions you should ask yourself when you approach a job. Is the tree dead or damaged? If the answer is “yes,” it should make the hair stand up at the back of your neck because there is potentially a big increase in risk working with a dead or damaged tree. What is the species of tree? You need to know the differences between the various species of trees. Some trees fall apart fast and some trees do not. Most people who work for a long time in a certain area get to know their trees. Dr. Alex Shigo has said that there are 10 trees that you have to know, wherever you live. Those are the 10 trees that you will work on 90 percent of the time. Know your trees to increase your safety.

If the job is to prune the tree, you should still inspect the base of the tree. This should be common knowledge for certified arborists, and everybody who has been to a tree climbing competition has watched the guys pretend to inspect the base of the tree before they head up into the tree. After you inspect the base, you should inspect the crown of the tree. I use binoculars a lot in my work as a consultant; when I have to, I climb trees to get a close look. A look with a cheap pair of binoculars can expose problems above, before you climb.

Other questions you might ask yourself about a tree include:

- ▶ Has the tree been topped in the past? In our area in Seattle, we have a lot of topped trees, which can be very tricky when you have to get up there and remove them.
- ▶ Do you see defects in the canopy?
- ▶ Is the tree obviously dying, with loose bark and broken branches?
- ▶ If you are pruning the tree, where will you set your rope? With a good knowledge of trees and a pair of binoculars, identify a safe place to get your rope crotched in. It is a common accident to tie into a poor crotch and have it break and take a spill in the tree.
- ▶ What is underneath the tree? If something does go wrong, if there are stakes or barbed wire beneath, you are in big trouble. I have known several people who have survived major falls from trees because they landed on something soft. It seems silly, but thinking about these things will raise your awareness when you are up in the tree.

There are a ton of risks when it comes to pruning trees and I think many of these are overlooked because the focus tends to be on the big, bad tree removal. You can get in big trouble with a small tree that has defects while pruning it. If the job is to remove the tree then all of the risks get ramped up. Arborists get all fired up when they approach a big tree removal. There is a tendency for that excitement to throw your judgment off.

Remember that it doesn't matter what kind of tree or job, always inspect the base of the tree. Careful observation of the base of the tree is important; walk around the entire tree. I can't stress enough how important this is. I have looked at trees where someone else has looked at the tree first. They told me that the tree looked fine. I walk around, look at the other side, and find the tree has a defect. I teach consultants, when they are learning their trade, to measure the tree. This way you must walk around it. It takes a little time, but it makes you look closer. Always clear away ivy or other plants so that you can see the base of the trunk.

What do you see? Do you see mush-

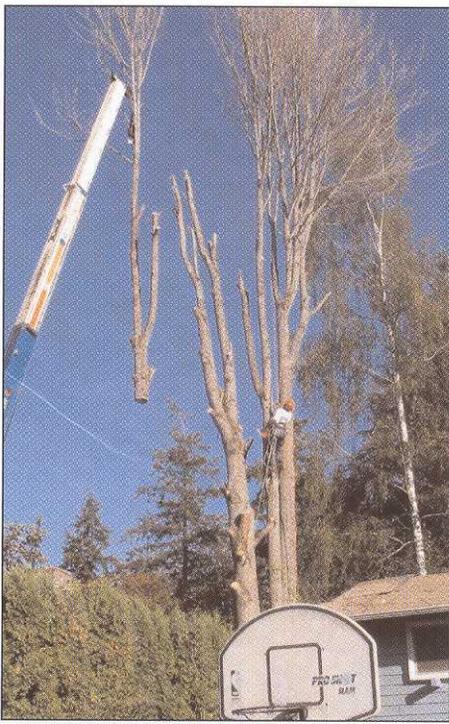


*The top of this maple was tied together to keep it intact during removal. All photos courtesy of Roger Barnett, Barnett Tree Care.*

rooms, cracks or loose bark? What about insect debris? Do you see anatomical signs of movement? By this I mean; do you see signs in the anatomy of the tree that it has already partially failed. What don't you see? Do you see the trunk flare? Do you see no green foliage? Is the tree weak looking? Trees that have grown with little vigor for a long time are weak and can be structurally weak as well.

Fruiting bodies of fungi are often a sign of severe decay in the roots of the tree and the trunk as well. When you have mushrooms or conks visible, you may have a serious problem. The fungi consume the wood of the tree. The wood loses strength. Every arborist should know to look out for trees with fungi growing out of the base of the tree.

*Facing page: Scott Baker works a grove of red cedar trees, all more than 6 feet in diameter and ranging from about 130 to 170 feet in height. This property had 10 lightning strikes, three just before this work was done.*



*This very dead maple was in tight spot, making removal delicate even with a crane.*

Observation is the way to be safer in the world of trees. When trees grow, the outer bark has to give way for the ring of wood behind. You can learn to observe tree bark anatomy and understand what it reveals about a tree's internal condition. The reaction wood that grows around tree defects can be very strong. Again, you have to know your species. It is a fact that the wood that grows around an injury can be many times stronger than wood that is produced in a part of the trunk where no defect is present.

Trees in poor condition can be easy to spot. Look closely at the bark. The bark anatomy of trees is very expressive of movement. When you see bark plates that are coming apart, overlapping, loose and falling off, it is often a sign that the tree has decay or defect. The bark surrounds a thin layer of what is essentially lubricant. The phloem and cambium allow the bark to slide. If a tree moves more than it should, very often the bark will move, too.

Movement of this kind is a critical sign that a tree is already in the process of failing. Many of the dangerous trees that you will work on are already falling down bit by bit when you approach them.

I commonly find that people forget that decay moves in trees following the CODIT model. CODIT is an acronym for compartmentalization of decay in trees. There are four walls in the CODIT model. The first wall is up and down the trunk. Joe the bulldozer driver breaks the trunk of the tree, the fungi come and the decay's easiest attack is up and down the trunk. Wall two is inward toward the center of the tree. Remember, species by species this is a little bit different, but as far as we know today every species follows CODIT. Wall three is decay moving around the tree around the trunk and around the rings. Wall four is the outside, the new tree that grows around the wound. It is the wood rings that have formed since the injury occurred. It is



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the strongest wall. It is useful to know this because, if you are wrecking out a big tree and you know how decay moves in the tree, when you start to encounter it as you bring the tree down, you can anticipate what you will encounter below you. Analysis of tree structure is complicated. Trees can be decaying from the bottom and from the top so you have to be a good observer. If you're chunking down a big tree and you watch your sawdust, you can tell a lot from it. You can smell, see and feel the bad wood. Remember CODIT.

The process of using tree anatomy to understand the condition of the tree is called, visual tree assessment – VTA. Tree climbers need to learn VTA. Many of you know a little bit of it, but it is an easy thing to learn. Since you are out dissecting trees all of the time, it is even easier. VTA is in use worldwide and it is cutting edge for people evaluating trees.

Remember to inspect the canopy of the tree. Look for dead or decayed areas, co-dominant trunks and stems, hanging branches, and obstructions. It is amazing how often people working in a tree get so caught up in looking at the whole tree, that they don't see the wire or the metal pole that was attached to the tree years ago. They are looking at the big picture and they miss details.

Observation will help you to think ahead. When approaching a hazardous tree, thinking ahead allows you to formulate a safe work plan. A safe work plan includes communication with your ground crew and with the crane operator and bucket operator – all of the people on the site.

Trees that have been dead for a while are often very dangerous. Everybody knows this, but it is amazing how little we consider this before putting on our spikes and heading up a tree that has been dead for

several years. Know your species. Some trees stand dead for a very long time and they are strong and tough. Some trees die and immediately begin to deteriorate. Remember, short-lived trees decay readily; long-lived trees are very resistant to decay. Any tree stressed by disease, drought or other factors is likely to be less able to resist decay and will often have other problems that are an issue for the removal. If the bark is off the tree, that would tell something about how long the tree has been dead. Start to make decisions on how you are going to address the tree while you are on the ground.

Removals generate large loading forces as the work progresses. If you are loading a tree that is weak and already falling apart or has been dead for several years, it is a recipe for danger. The obvious decision would be not to remove big loads. Take smaller loads. The boss wants you to be done today and the temptation is to take a



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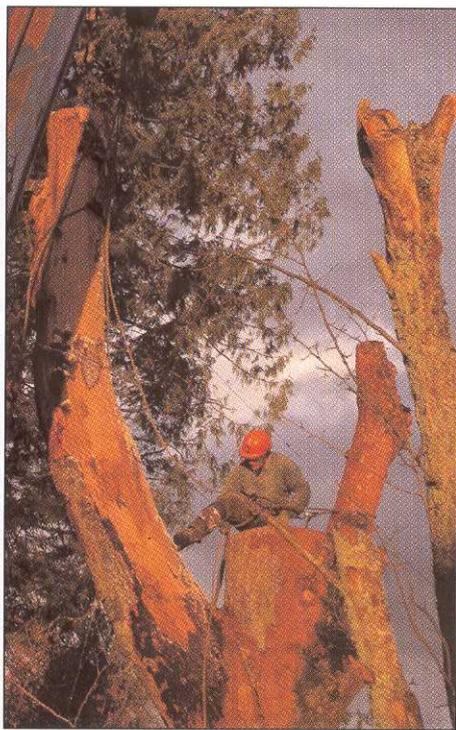
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Removal of this dead elm, a victim of Dutch elm disease, was complicated by brittle wood and a nearby primary wire.

bigger piece. You are nervous and don't want to go any higher to knock the top off so you make a mistake and take too big of a piece. Have you ever been in a tree working with a piece that came back that was a little too big to get over? This is the time that you will be having nervous thoughts about your initial inspection and decisions.

Be careful rigging in a questionable tree. The photo on page 9 shows a very dangerous removal of a large tree in a tight spot. The trunk was rotten, including the main stem that supported all the rigging. The climbers tied the top of the tree together to hold it, hoping that this would reduce the likelihood that the load on the zip line might pull the tree apart. Why were they there doing this job? First of all there was no crane access. They were very careful with this tree and had looked at it for a long time. They had some very good arborists look at the tree and they were as prepared as they could be, but they definitely did

take a risk with this tree.

Roger Barnett the arborist in charge of taking the tree down told me that he was very nervous with the tree and he used all of his skill. He recruited helpers outside of his normal crew that he knew would back him up on the job. There are trees out there that you might be expected to work on. If you are a small company and your crew is not that experienced, but you have a friend or even a competitor who could help you, don't be foolish enough to not ask for help. If you need a little help, it isn't shameful; it just shows that you are a smart professional.

There are many ways to assess tree condition. Often, simply pushing something into the tree you can see if it is very hollow. This is a simple method. Before you buy a Resistograph drill or another tool, think about using simple tools. Learn to use your simple tools; learn the strength-loss formula.

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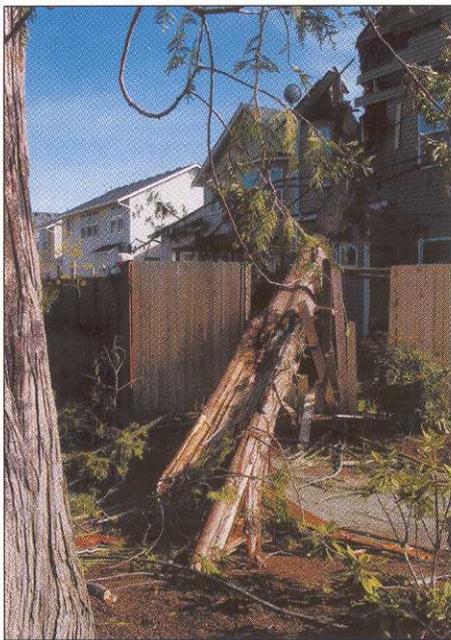
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TREE CARE INDUSTRY – OCTOBER 2004



*The top 40 feet of this cedar, which had previously been struck by lightning, fell to the ground with just a light breeze blowing.*

las; work your way up the learning curve and then purchase your fancy stuff. Don't become so focused on gear to the point where you are not thinking.

An arborist called me concerned about a big old elm tree. He was nervous enough

that he came down and called me to come take a look at it. He told me that the crew was there, but that he thought maybe he should walk away from the job. I was surprised, but I think he was probably correct. He should have gotten the help of a small crane or a bucket truck. Why put yourself at unnecessary risk?

In many cases, if there is no top to the tree, you can have a tree that has almost no sound wood but, since there is no load, the tree is still standing. When you see this sort of thing with a tree that has a very tall stem that is still intact you are looking at a tree that is very weak. Trees like this may do okay with a little breeze, wind and rain, but when Joe gets up there and they are blocking down the tree, the rigging forces can cause a buckling failure in a tree that is this decayed. This doesn't happen that often, but there are a lot of amazing accidents in our profession that we don't hear about.

If you are felling a hollow tree, remember that you are not going to have much hinge wood or control. If you are rigging the tree, remember that not only might it be hollow but it could also be ready to fall. Trees can stand looking massive and

immobile and then, in a light breeze, fall over. There have been quite a few accidents involving trees that looked good but fell over because of root rot. Don't be shy about doing a little digging and poking around.

It still surprises me, after 32 years, that there is always a tree crew out there that will take any job without careful evaluation. If you are in a situation where your customer is stubborn and they are going to take the yahoo's bid that is one half of your bid, walk away. Don't lose money on a dangerous removal. I think that is one of the most important points that I want to make. There is no loss of pride in backing off.

I worked on a grove of red cedar trees all more than 6 feet in diameter. They range from about 130 to 170 feet in height. This property has had 10 lightning strikes, three just before my visit. I decided that I would climb up and see how bad the damage to one tree was. While climbing up the tree I heard a funny noise and decided to back down. I did the rest of my inspection with binoculars from the ground. That night, the top 40 feet of that tree fell to the ground with just a light breeze blowing. I'm glad I was paying attention that day.

Every storm-damaged tree is a hazard tree for the crew. At the end of six or eight hours of hard work following a storm, it is hard to remember that fact because you just want to cut and run. This is the time to slow down and perhaps admit that you have had enough for the day and save some work for tomorrow.

Trees are amazing and wonderful. They are survivors and live much longer than us. If you learn to look closely at trees you will be a much safer climber and you will be a better arborist. You will be happier at the end of the day.

*Scott D. Baker is a registered consulting arborist, certified arborist, and developer with more than 30 years experience in tree management, site development, construction and sustainable technologies. This article was taken from a presentation he made at TCI EXPO Spring earlier this year.*     ⚡

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