Cross-grain cracks are due to fail.

Conducting a Visual Tree Assessment
Step 2: Root Flare and the Tree Trunk

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In the last issue, we began our Visual Tree Assessment (VTA) by inspecting the ground around the root flare. The next area to assess is the root flare—where the ground and the trunk appear to meet. This area is also referred to as the *elephant's foot*, *basal flare,* or the *root collar*. The importance of this portion is that it stabilizes the tree and transports nutrients and water from the roots to the rest of the tree.

Inspecting the Root Flare

Unfortunately the root flare is often damaged during construction by earth moving equipment, by homeowners using lawnmowers and string trimmers, and even by animals. It is imperative to visually inspect the root flare from all directions whenever possible.

One of the key ways to assess this portion of the tree is to count the number of flares, and then determine the number with decay. If there are 30% or more with widespread decay, the tree may be seriously unstable. The hard part of the determination is to assess how much decay is too much. A tree with extensive root flare decay should not be climbed unless there is another tree or a commercial crane to support the arborist.

As you assess the tree, watch for cross-grain cracks in the root flare and tree trunk. Old trees will sometimes exhibit with-grain cracks that must be inspected and analyzed, but cross-grain cracks should receive closer scrutiny. Wood does not naturally crack across grain! Also, consider any lean the tree may have. Combine a cross-grain crack with the plane of lean and you may have double trouble.

Unfortunately for an Arborist performing a VTA, a tree that is structurally unsound may look "beautiful" to the untrained eye. It is a good idea to create a company or agency policy concerning the level of tolerance and to stick to it no matter how "beautiful" the tree is. In other words, the policy could read "trees with 30% or more root flares with decay will be removed or receive further inspection by a Certified or Registered Consulting Arborist," or "trees with any visible cracks in the root flare or trunk should be inspected by a Certified or Registered Consulting Arborist."

Examining the Trunk

The next step in the VTA process is to examine the trunk of the tree. In order to do this properly, it is necessary to understand that a tree can be in full leaf and still present a hazard due to various weaknesses. Before examining the trunk of the tree, it is important to understand tree trunk composition and for what functions the trunk is responsible.

The trunk is made up of heartwood, xylem and phloem, cambium, and bark. The function of the trunk is to add support to the tree and to act as a shock absorber during high winds and storms. Basically, the heartwood provides much of the structural support for the tree, while the xylem and phloem allow for nutrient and water transportation between leaves and roots. The cambium aids in wound callusing and helps in the growth process; the bark protects the whole trunk from bacteria and pest attacks.

Now, How Can This Delicate System Malfunction?

Trees are much like human teeth; as teeth rely on enamel, trees rely on bark for protection. Trees often are damaged during construction and development, which leads to trees becoming weak as they decay and tries to compartmentalize the decay. The process that trees go through in reaction to a wound is called Compartmental-

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ization of Decay in Trees (CODIT). Basically this refers to the process through which trees wall off cells to prevent bacteria and decay from spreading throughout the system. Some trees compartmentalize damaged cells better than others. The best way to protect a tree from damage is to refrain from damaging it in the first place.

Construction and development are not the only damaging agents for trees; lightning, high winds, other trees falling, insects, malicious humans, animals, and birds all damage trees. As the VTA of the trunk is being performed, it is important to look for any signs of these damaging agents.

- **Cavities are the first thing to look for.** Often a tree will decay around an old wound, forming a cavity. Remember that the presence of a cavity does not warrant immediate removal of the tree. It is necessary to determine how strong the tree is and how extensive the cavity is. If every tree with a cavity were removed there would be remarkably fewer trees in landscapes. Sometimes the tree may have an extensive cavity and still may be strong enough to remain. When extensive hollows are present, an arborist should be consulted to determine the thickness of sound wood in the remaining cylinder of the trunk.
- **Another thing to look for on the trunk is loose bark.** These could be areas that were damaged at some time during the tree's life, or they can result from a crack in the trees trunk. What you have to determine is what caused the bark to become loose and how much damage there is.

  If there is evident, extensive decay behind the loose bark the tree needs a closer look. Is the area of decay an isolated area emanating from an old wound, or has it incorporated 30% or more of the trunk of the tree? With larger areas of decay, it may be necessary for an arborist to evaluate the extent of the decay.
- **The next thing to look for is the presence of woodpecker holes on the trunk.** Woodpeckers do not indiscriminately attack a tree. They are generally looking for a meal of ants or other insects. The presence of woodpecker holes may be a telltale sign of other problems. This may result in the need for an in-tree examination by an arborist, or at least a visual inspection with a good set of binoculars. Remember that a yellow-bellied sapsucker will poke shallow holes in a horizontal line around a tree, but that these holes rarely cause damage. Concentrate on the deeper holes that are left by a pileated or red-headed woodpeckers!
- **Odd bulges in an otherwise straight trunk may signify the development of reaction wood around a cavity inside the trunk.** The aspen at the right has both an odd bulge and woodpecker damage, both of which warn of potential failure that could be catastrophic depending on the tree's location.
- **Next look for odd bends in the tree** and try to determine if they have always been there. These bends could present a weak spot in the stem of the tree. It is possible that the tree was recently exposed to changes in its environment that cause more pressure to be put on a bend. It is important to make a qualified estimation of whether or not the tree with this odd bend can sustain the weight of ice or snow without failure.

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- **Look for long vertical cracks in the tree,** especially examining for cracks on both sides of the trunk, as if the tree split into two separate pieces. Trees often split when put under high wind loads or heavy snow and ice loads. These cracks are very significant signs of tree weakness.
- **One final thing to look for is fungal growths, which can signify decay in the trunk.** Realize that a fungal growth requires moisture and air to grow and many fungal growths actually lead to deterioration of the wood of a tree. Certain fungal growths are worse than others, and there are varying degrees of decay. What is important to realize is that fungal growths are a warning sign of problems that should be investigated!

Watch this column next issue for a continuation of the Visual Tree Assessment approach to Risk Tree Assessment. Remember when in doubt, don't guess. Call a Certified or Registered Consulting Arborist who is trained in Visual Tree Assessment to assist you in your determination.