

Keeping Trees as Assets

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Landscape trees have real value and contribute to making livable communities (Figure 1). Making the most of that value requires providing trees with the proper care and attention. As potentially large and long-lived organisms, trees benefit from commitment to regular care that respects the natural tree system. This system captures, transforms, and uses energy to survive, grow, and reproduce.



Figure 1. High-value trees in historic Philadelphia.



Figure 2. Poor form weakens trees and decreases the long-term value.



Figure 3. Urban soil is sometimes barely soil at all.

Trees are sometimes valued as if they were inanimate sources of shade, air filtration, and social amenities. As landscape professionals, we need to remember that urban and community trees are living organisms in our care. We are responsible to them as well as to the society we serve. With improper care or neglect, trees can lose their value due to conflicts with human society with respect to form, location, and the legacy of past treatments. Improper care tends to be repeated on the same trees over and over again, aggravating the harmful impact on tree health.

Some trees have a form that will likely cause problems as the tree matures in the urban and community landscape (Figure 2). Problems with form may be due to the individual tree, but often poor form may be characteristic of a tree species or horticultural variety. Problems with tree form extend far beyond appearance. Some tree species, especially those that readily produce basal sprouts, may form tightly appressed codominant stems with included bark. The attachment between the codominant stems can be weak. Trees do not “grow out” of this problem. As stems increase in size and weight, the attachment will grow weaker, not stronger. The outward-moving vascular cambium of each stem will physically push against each other and result in dead spots. This is especially unfortunate in that the potential for this sort of problem is often obvious when the tree

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is a small sapling. The time to select a leader is when the codominant stems can be clipped off with hand pruners.

Tree location is the spatial relationship of the tree to its natural and manmade surroundings, both above and below ground. Many tree problems begin below ground, especially for trees planted in construction debris rather than soil (Figure 3). Trees and their root systems are part of living soil communities that help trees assimilate essential elements and better withstand the threat drought and root disease (Figure 4). Planting too deeply impairs root respiration and can encourage girdling roots.

Trees growing near structures are another source of problems, for both “volunteer” and planted trees (Figure 5). The growth of volunteer trees immediately next to buildings illustrates the tenacity of trees to survive and grow in a harsh environment. Perhaps such a volunteer should be considered as a weed (“a plant out of place”) and removed.



Figure 4. These mycorrhizal tree roots in a healthy landscape contribute to long-term value.



Figure 5. This volunteer tree is not sustainable and should be replaced with a healthy greenspace.

Trees growing near structures are another source of problems, for both “volunteer” and planted trees. The growth of volunteer trees immediately next to buildings illustrates the tenacity of trees to survive and grow in a harsh environment.

At the same time, however, the tree may help give local residents some sort of living landscape that is not being provided otherwise. Ideally, removing the misplaced volunteer should be part of developing a greenspace to enrich the immediate neighborhood.

Many cities and towns are fortunate to contain veteran trees that contribute character to the community environment. Unfortunately, too many of these trees bear witness to improper tree treatments. Many of these legacy treatments involved repeated cycles of tree wounding (Figure 6). The biological response to tree wounding is the compartmentalization process.

Compartmentalization in wood resists the spread of pathogens through the formation of boundaries. Trees may endure repeated cycles of topping, flush cutting, and excavation of cavities. These improper practices worked against the natural compart-

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mentalization process and resulted in extensive cracking, decay, and a risk to people and property. The risk comes from the disregard of basic tree biology concerning how branches are attached to stems and how compartmentalization boundaries resist the spread of infection and the loss of normal functioning.

It's appealing to think that the improper procedures that harm trees are all part of the past. However, trees are still systematically mutilated, removing much of the foliage and energy capture system while providing enhanced opportunities for fungal infection and weakening of tree struc-

ture. Concern over the spread of invasive pests has renewed attention in treatments involving stem injection. Under special circumstances, stem injection of toxic chemicals might be a legitimate part of a tree protection program. However, some combinations of injection methods and treatment materials result in extensive dieback of the vascular cambium. This dieback can produce a wound far larger than the point of injection (Fig. 7). The consequences of tree injury should become part of the decisionmaking process on whether or not to inject.

Land managers and the public are

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learning more than ever about the great benefits bestowed by healthy urban and community trees. These benefits are increasingly viewed as “necessities” and not just as “amenities.” Properly trained and educated landscape professionals have a great opportunity to enhance the quality of urban and community trees. An application of the fundamentals of tree biology in selecting and applying tree treatments will make the most of this opportunity. ■



Figure 6. Although the canopy is still green, the improper pruning and repeated topping cuts greatly reduce the long-term value of the tree.



Figure 7. Removing the bark from this white ash shows a large injury from a common tree injection treatment.