Adam Blalock

GIRDLING ROOTS

Girdling roots are caused by tree or large shrub roots growing around the trunk and slowly strangling the plant to death. These roots do not grow out from the trunk in a normal linear fashion; instead they circle the trunk or other roots. If left untreated they will eventually kill the tree by restricting the xylem and phloem functions and the tree will either die via strangulation or topple in a wind because of the weakened root crown.

In the pictures below you will see several examples of girdling roots. Figure 1 shows a large mature tree with a root growing over another root on the right hand side. I suspect there is another girdling root on the left side of the trunk because of no root flare. A normal root flare on a large maple is seen in figure 2. Notice how most of the roots come straight out from the trunk and how much higher they are than the surrounding ground. That usually indicates a strong healthy root crown and system.

In figures 3 and 4 you will see the consequences of girdling roots. Here the girdling root is on an Austrian Pine (*Pinus nigra*). Eventually the pine will topple in a wind because of, one, very little root growth on the one side and two, weakened and stressed xylem, phloem, and cambium.

In figures 5 and 6 you will see more examples of girdling roots. Figure 6 is a great example. Note how the root, although small, is wrapped more than 180 degrees around the trunk. Right above the girdling root you will notice that the trunk tissue is starting to swell indicating restricted flow of phloem and xylem.

A rule of thumb to remember is that girdling roots are far easier to prevent than treat. The first treatment practice is prevention. Planting balled and burlap plants will generally avoid girdling roots because the roots are cut, bundled in burlap with soil, then once planted the roots will usually grow straight out into the surrounding soil. It helps if the planting hole has vertical walls and the existing soil is porous with adequate water and nutrients. Planting bare root plants you will want to make sure that the roots are not kinked or bent in any way. If the hole is not big enough carefully and cleanly prune the roots or just make the hole bigger. Potted plants will usually have some circling roots. To prevent the roots from continuing to circle once in the hole make 3 to 5 vertical cuts along the side, rough them up a little and then plant using standard planting practices.

If you are forced to treat an existing girdling root measurements much more drastic must be made. If the girdling root is so severe that the trunk has grown into it and damage might result if you were to remove the root, then it is probably best to leave the tree or have it completely removed if there is danger of it falling. If the girdling root is not so severe or caught early it can be pruned out with a saw, shears or pruners. Figure 1

has a girdling root is too large and far along to safely remove. However, figures 5 and 6 have girdling roots that are small enough to safely remove without serious damage to the tree.

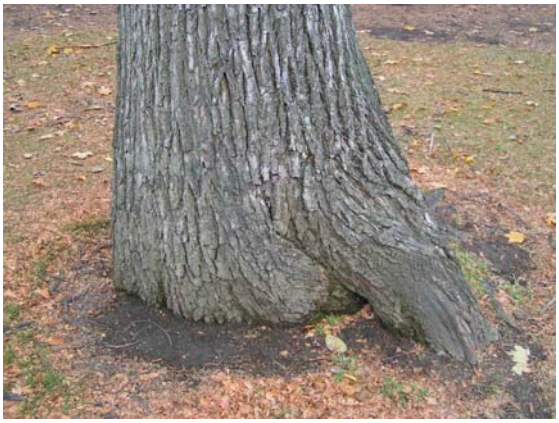

Fig.1

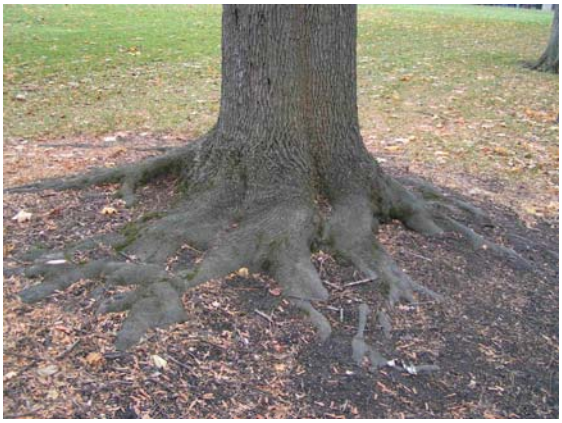

Fig.2

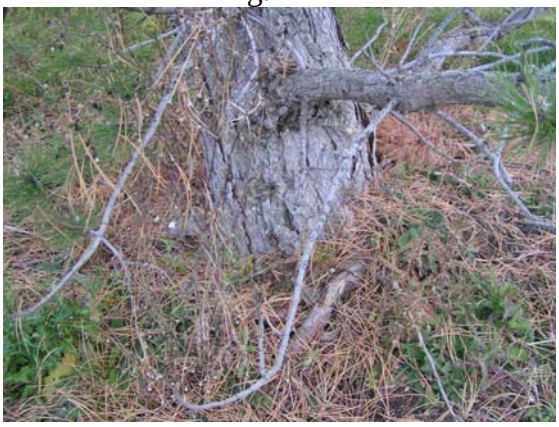

Fig. 3

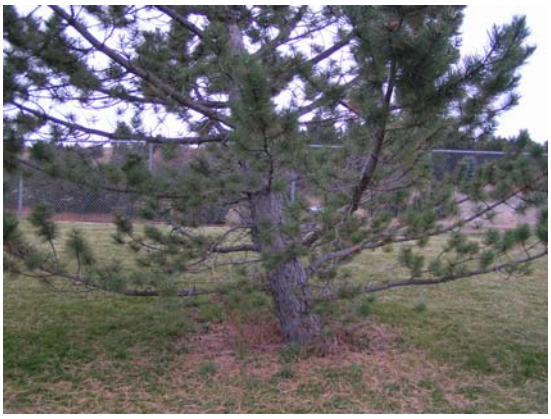

Fig. 4

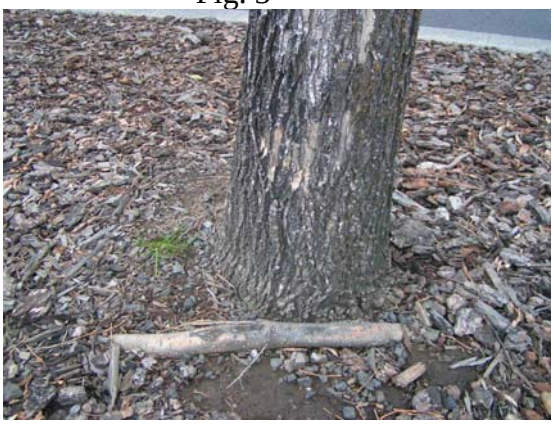

Fig. 5

Fig. 6

Works Cited

"A Practitioner's Guide to Stem Girdling Roots of Trees." Communication and Educational Technology Services. 2002. University of Minnesota. 15 Nov. 2007. <http://www.extension.umn.edu/distribution/naturalresources/components/7501_07.html>.