



SOUND
NATIVE
PLANTS

Girdling trees

Girdling – or cutting through the cambium around the entire tree circumference – is an effective means of killing individual trees or excluding a particular tree species. Girdling can be used to control non-native invasive tree species such as tree-of-heaven (*Ailanthus altissima*) or English holly (*Ilex aquifolium*). Girdling may also be used to remove particular native species that threaten sensitive or rare ecosystems, such as Douglas-fir (*Pseudotsuga menziesii*) that have invaded South Sound prairies. Girdling techniques may be applied to meet certain management goals such as increasing wildlife habitat by creating snags. Girdling is cost-effective because the operation can be completed quickly and requires minimal tools and expertise.

How does girdling work?

Girdling means cutting through the outer surface deeply enough to completely sever the cambium around the tree's entire circumference. The cambium contains xylem and phloem – the conducting cells. Xylem conducts water and phloem conducts sugars and other nutrients between the roots and the foliage. Severing the cambium restricts and/or prevents the flow of these resources. Over time the tree dies from lack of water and/or nutrients.

Phloem occurs in the outermost section of the cambium and is severed by a shallower cut than xylem. Severing the phloem prevents the flow of carbohydrates from the leaves to the roots. If only the phloem layer is severed, it will take several years for the tree to die – first all carbohydrates stores in the roots must be depleted. Severing the xylem results in quicker mortality, but it sometimes triggers increased suckering below the cut.

Spring and summer is the best time to girdle trees. After initial spring growth, resources have been depleted and the tree is most vulnerable. Bark and cambium are also looser and easier to remove at this time than in fall. Girdled trees typically die slowly over several years, allowing understory species to adapt gradually to greater light levels. Girdling also reduces the safety hazards to workers, compared with the alternative of falling the trees.

What is the best way to girdle?

To girdle a tree, a strip of bark and cambium is stripped off the tree in a continuous ring, placed below the lowest branches on that individual. If the girdling cut, or “kerf”, cannot be placed below all branches, any branches below the cut must be removed. The kerf must completely encircle the tree's circumference without interruption. At least two parallel kerfs are usually necessary to ensure success. Sometimes, the bark is removed from between the two kerfs to discourage the cambium from growing back together.

Girdling can be performed with a chainsaw, axe, or specialized girdling tool. If girdling with a chainsaw, for each kerf saw two parallel grooves around the tree a few inches apart, and remove the bark between the grooves with a chisel or other implement. If girdling with an axe, chop two parallel grooves around the circumference and remove the bark with downward strokes. Gasoline-powered girdling tools are not widely available – to either rent or purchase – and would make sense only for very large jobs.

Several hand tools are available commercially that may be used to girdle trees quickly and effectively. Girdling tools generally use a sharp metal blade to strip the bark and sever the cambium in a single pass. Tools manufactured specifically for girdling are available from many forestry suppliers. Another tool that works well for girdling is a “scorp” - a wood carver's tool for hollowing out wooden bowls – available from woodworker suppliers. The US Forest Service has published an overview of girdling tools at: <http://www.fs.fed.us/eng/pubs/pdfpubs/pdf99242809/pdf99242809pt03.pdf>.

Which species can you girdle?

Girdling works best for non-clonal tree species that do not sucker readily from roots or stumps. Clonal species such as aspen are connected by the roots, so girdling is usually ineffective. When controlling non-native species, those that sucker aggressively, such as English holly, may require applying herbicide in or below the girdling cut to prevent suckering. Always apply herbicide according to the manufacturer's instructions, and wear appropriate protective equipment.



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