Help Stop the Invasion of Unwanted Trees

Staff and volunteers work to control invasive trees and shrubs in an effort to restore natural conditions in Seattle, Washington's parks and other areas of the urban forest.

Like it or not, our world is shrinking. With modern trade systems, daily international transportation, and a climatic warming trend, environmental change is inevitable. The spread of plants beyond their natural range is one of these changes. Unfortunately, in many cases this is detrimental or even disastrous to the local ecosystems where the plants are introduced. We cannot turn back the hands of time or stop the invasion of alien plants. However, we can and should recognize the problems they create and take action to keep invasives under control.

We venture into controversial territory with the topic in this issue of the bulletin. One problem is that a tree considered as an invasive to one person may be highly valued by another. It is somewhat analogous to "one person's trash is another person's treasure." Another thing that makes this topic difficult is that a tree in its natural habitat most likely is harmless and fills an ecological niche. It is when it is transported outside its natural range that it can become troublesome.

There is also the challenge of unlearning long-standing information. For example, autumn olive trees (*Elaeagnus umbellata*) were once touted by college professors and natural resource managers as the thing to plant to help wildlife. They were introduced into the United States around 1830 and were long promoted as a way to improve wildlife habitat and control soil erosion. Unfortunately, this small tree has the ability to create dense shade, crowd out native vegetation, interfere with natural plant succession, and disrupt nutrient cycling. In short, it alters the ecosystem — and not in a beneficial way.

Still another challenge is that some invasive trees, like invasive insects, have look-alikes that are perfectly harmless and in many cases beneficial. Native sumac species (*Rhus* spp.) and young walnut trees (*Juglans* spp.) can easily be confused with the invasive tree of heaven (*Ailanthus altissima*). Finally, there is sometimes name confusion. For example, the common name goldenraintree is used both with the benign shade tree *Koelreuteria paniculata* and its invasive cousin, *Koelreuteria elegans*.

Vines, too, can be villainous in the landscape. The smothering effects of white bryonia and English ivy are well-known, and the infamous kudzu is said to sometimes elongate a foot in a day, covering all in its path. These and other plants require action, too, but because of space limitations, we focus primarily on trees in this issue.

Despite the daunting challenges, invasive trees warrant the attention of tree boards, urban foresters, and all property owners.

Fundamentals of Invasive Trees

Definitions

Like almost any concept, exact definitions vary. The following is from Federal Executive Order 13751, amended by Executive Order 13751 (2016), 'Safeguarding the Nation from the Impacts of Invasive Species'.

ALIEN SPECIES means, with respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem.

INTRODUCTION means the intentional or unintentional escape, release, dissemination, or placement of a species into an ecosystem as a result of human activity.

INVASIVE SPECIES means an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.

NATIVE SPECIES means, with respect to a particular ecosystem, a species that, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem.

THE NATIVE VS. NON-NATIVE DEBATE

There are some who are passionate about avoiding non-native trees in planting programs. Non-natives should not be confused with invasive trees. The fact is that some are and some are not. Where planting natives can be done and the trees provide the needed service such as shade, windbreak, or a landscape aesthetic, then natives are likely to be well-suited to the climate and possibly the planting site. Planting natives then makes good sense. However, many communities in the Midwest and West would have few trees from which to select and little diversity in the urban forest without the help of non-natives. A planting plan should look at all characteristics of trees under consideration and selections should be made to meet local needs, ensure longevity and diversity, and exclude any invasive species.

While every effort should be made to avoid planting species that are on a federal or state list of invasive species, many communities would be deprived of useful trees if only native species were planted.

A DIFFERENT PERSPECTIVE

Every day we learn and respond. If we receive new information and don't react to it, we won't be effective.

– Phil Gruszka, Director of Horticulture and Forestry, Pittsburgh Parks Conservancy

The nonprofit Pittsburgh Parks Conservancy has been as aggressive as any organization in the fight against invasive trees. However, according to ecology-minded Phil Gruszka, "We have largely backed off from what we used to do to combat invasive tree species. I call it adaptive management."

Phil and his team found that as invasive Norway maples, trees of- heaven, and other non-natives were removed, the new trees seeding in naturally were primarily white and green ashes. This was just ahead of the arrival of emerald ash borers in the Pittsburgh area! Phil says, "At first we thought, 'hooray, natives.' But then the thinking was that if invasive insects and diseases are going to get our natives, it is better to have a canopy of Norway maples than no forest at all. We won't plant Norway maples, but we aren't attempting to remove them all, either."

The approach to restoration in Pittsburgh's parks is now more sophisticated. Where concentrations of invasive trees exist in parklands, volunteers and staff still attempt to remove them. However, specific native trees will then be purposefully planted, with about 80% of them being early succession trees that grow quickly and, hopefully, will shade out invasive species. A diverse palette of trees is selected for planting depending on site features such as slope and exposure. For example, birch trees might be planted at the base of a slope and tulip poplars higher up.

The Parks Conservancy works closely with Pittsburgh's city forester and staff in the city's Public Works Department in the continuing fight against invasive tree species.

Wild grapes being cut by an Urban EcoSteward volunteer in one of Pittsburgh's parks.

Goats Join the Fight

Along with various volunteer organizations that help with the labor of clearing and planting, another ally is a small herd of hungry goats. Each spring and fall an area infested with invasive vines or the troublesome Japanese knotweed shrub is surrounded by a portable electric fence in which the goats are placed to feed. An orange fence is added beyond the electric fence to keep back curious onlookers.

In three or four weeks, roughly an acre of parkland is cleared of the invasive vegetation. According to Phil, the goats bring an added benefit of strong public attention and interest, providing an opportunity for education about invasive vegetation. Grant money is used to fund the project.

Goats owned by Steel City Grazers are especially effective on steep or other difficult sites. Pittsburgh's parks have been pesticide-free for the past four years and the mission of this partnership aligns with the goal of providing an environmentally friendly alternative to herbicides and fossil-fueled machinery.

WHEN NATIVE TREES DIE

As can be seen in the Pittsburgh example, invasive vegetation can gain a foothold when fire, storms, or insect epidemics kill the natural overstory. This has been a concern in California where the California Invasive Plant Council (Cal-IPC) is working to control a Pandora's box of invasive plants that spread into areas of extensive tree mortality. Disturbed areas everywhere provide a potential foothold for invasive plants. In the natural areas of the Sierra Mountains, this threat is especially important. In response, Cal-IPC maintains an inventory of plants that threaten California's natural areas and works with state and federal land management agencies to prioritize control work. Cal-IPC also provides public education about invasive plants and best management practices for effective control.

*The following is condensed and modified from material provided by the Wisconsin Department of Natural Resources. A direct link to more information about the following methods of control is provided at this bulletin's Supplemental Resources webpage at **arborday.org/bulletins**. In all cases, local experts should be consulted for guidance. In the case of a new outbreak, or the concentration of an invasive species, work should begin at the farthest edges of the invasion and proceed inward.*

MANUAL CONTROL

These methods can be used in small areas and include digging/hand-pulling, smothering with mulch, and in some cases, flooding.

Hand-pulling is especially difficult on saplings with a circumference wider than 3/8 inch. Larger stems can be pulled out by the roots using a levering device such as the commercially available Uprooter or Weed Wrench. They are available in various sizes.
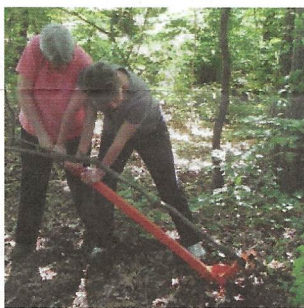
MECHANICAL CONTROL

On larger areas, mowing (prior to seed formation), chopping, hoeing, and girdling can be effective. Girdling is removal of the bark and inner bark in a 1"–8" wide ring (depending on diameter) around the trunk of the tree. Herbicide can be applied in the cut for greater effectiveness.

PRESCRIBED FIRE

This method is for use in plant communities that have evolved with fire such as oak woodlands, prairies, savannas, and sedge meadows. For expert use only and always when following local burning rules.

CHEMICAL CONTROL

With some invasives, there is little or no alternative than to use a herbicide. In all cases, it is best to engage a licensed applicator. Methods of application (and always following label instructions!) include basal bark treatment (on the lowest 6 inches or more of the trunk), cut-stump treatment (as the name implies, placing the herbicide on a stump), and foliar spraying.

An advantage of the careful use of herbicides is that it leaves the soil undisturbed, requires less labor than some other methods, and is usually the most cost effective.

BIOLOGICAL CONTROL

For vegetation control, this usually means the use of goats, sheep, or cattle.

CULTURAL CONTROL

This is the manipulation of forest structure and composition to control invasives, or maintaining a closed canopy.

CONSIDER DISPOSAL

When planning for the eradication of invasive species, don't overlook how the plants will be disposed without spreading seeds. Some methods include burning, burying, or placing in a labeled bag for a sanitary landfill or transfer station. Use common sense and follow local rules.

What You Can Do

Learn more about invasive trees in your area and share information with others.

Control or eradicate invasives on your own property or by helping neighbors.

Volunteer to do control work with a group or contact your city forester or park supervisor to offer your help.

Support ordinances that prohibit invasive species.

FOR MORE INFORMATION

Quick links have been provided for more information about the organizations and methods described in this bulletin. These can be found at the Supplemental Resources pages of **arborday.org/bulletins**.

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