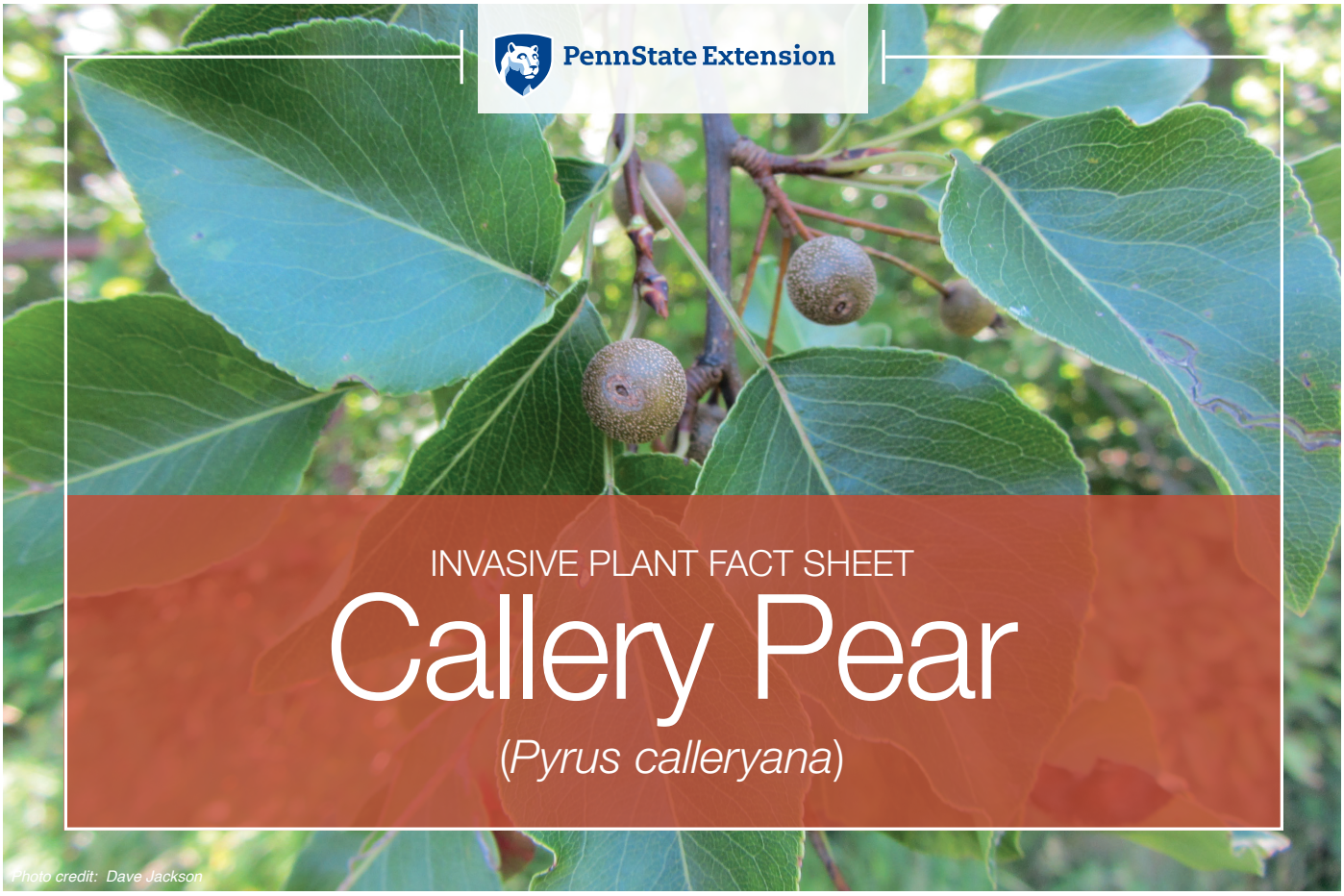

Background

Native to Asia, the Callery pear (*Pyrus calleryana*) was originally introduced to the United States in the early 1900s as rootstock for domesticated pears. It is also known as "Bradford" pear, a name given to its most widely planted landscaping cultivar. Starting in the 1960s, Callery pear has been widely planted as a street and ornamental tree. Pennsylvania is at the northernmost edge of its invasion front, with the species being well established throughout the South and Midwest.

Description

Size: A small tree, rarely more than 40 feet tall with a trunk less than 1 foot in diameter.

Leaves: Alternately arranged, rounded or teardrop shaped, thick, waxy, and approximately 1½ to 3 inches long and wide. The leaf edge, or margin, is finely toothed and has a distinct ripple or wave.

Flowers: Several white, five-petaled flowers are held together in a ball-shaped bundle, with each flower being about ¾ inch across. The blossoms produce a strong, rancid odor.

Fruit: Tiny, hard pears each ½ inch in diameter, green to brown in color, flecked with pale dots, and held in the same clusters as the blossoms. The fruit is almost woody, until softened by frost.

Bark: Grayish brown, smooth on young limbs, and grows deeply fissured or scaly as the tree gets larger. Though the plant was initially bred to be spineless, stout, sturdy spines are often found on naturalized individuals.

Look-alikes

Native flowering dogwood (*Cornus florida*) and viburnums (*Viburnum* spp.) have similarly rounded, leathery leaves, but they are oppositely arranged, unlike the alternate arrangement of Callery pear. Alternate-leaf dogwood (*Cornus alternifolia*) also flowers alternately but has a unique growth form where its branches emerge in whorls rather than in the tight, upright forks of Callery pear.

Dispersal

Though cultivars of this species were bred to produce sterile fruit, cross-pollination between different varieties has resulted in viable seeds. When different cultivars of Callery pear are grown within insect-pollination distance, they often produce fertile seeds that can sprout once dispersed. The resulting wild individuals can interbreed and produce more viable seed, furthering expansion and dispersal.

The showy floral display that lends to its aesthetic appeal in landscaping also produces a glut of fruit, which is readily eaten by birds and dispersed in their droppings. Callery pear also spreads vegetatively, sending up new shoots from its shallow root system.

A. Leaves showing wavy, serrated edge.
B. Fissured, scaly bark on a larger tree.
C. Five-petaled, showy flowers in a ball-shaped bundle.
D. Tiny, pear-shaped fruit flecked with pale dots and green to brown in color.
E. Stout spine found on naturalized specimen.
F. Callery pear invading early successional habitat.

Photos by Dave Jackson and Eric Burkhart

Site

Though tolerant of partial shade, Callery pears prefer full sun and are often found along roadsides, in old fields and hedgerows, and along forest edges.

Control

Individual small plants can be pulled by hand. However, all roots must be removed when pulling because root fragments often resprout. Cutting or mowing effectively eliminates the low cover and provides access to overgrown sites, but plants will readily resprout. Isolated individuals with larger stems can be targeted with a chainsaw. For mowing and cutting to be

Management Calendar

The management calendar for Callery pear is quite flexible. Note that flowering occurs before leaf out in this species. Basal bark or cut stump treatments provide a year-round window of opportunity.

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Flowering and Seed Ripening												
Leaf Out												
Foliar Herbicide Application												
Basal Bark, Cut Stump, and Hack-and-Squirt Treatments												

Treatment and Timing

Callery pear has a long foliar application window. Basal bark and stump treatments can be made anytime the weather permits. Product names reflect the current Pennsylvania state herbicide contract; additional brands with the same active ingredients are available.

Treatment	Timing	Herbicide	Product Rate	Comments
Foliar	Mid-May to onset of fall color	Aquaneat (glyphosate) plus Garlon 3A or Vastlan (triclopyr)	3 quarts/acre plus 2 quarts/acre or 1.5 quarts/acre	A combination of glyphosate plus triclopyr is effective against a broad spectrum of woody species. Additionally, this mixture reduces risk to nontargets because it has practically no soil activity. Garlon 3A and Vastlan are both water-soluble triclopyr formulations but have different active ingredient concentrations. A surfactant (e.g., Alligare 90) needs to be added. If using a different glyphosate product, be sure to check the product label to see if a surfactant is needed; some come premixed.
Basal Bark	Year-round	Pathfinder II or Garlon 4 Ultra (triclopyr ester)	Ready-to-use or 20%, 1:4 in basal oil	Oil-based herbicides penetrate the plant's bark and travel systemically through the plant. Basal bark applications wet the entire circumference of the lower 12 to 18 inches of the stem. Aim for full coverage on stems without creating runoff.
Cut Stump	Year-round	Pathfinder II or Garlon 4 Ultra (triclopyr ester)	Ready-to-use or 20%, 1:4 in basal oil	Cut stump treatments with oil-soluble triclopyr ester herbicides are applied to the cut surface as well as the sides of the stump and can be applied anytime after the stems are cut. An oil-soluble dye should be added to improve tracking and avoid skips and duplicate treatment.
		Aquaneat (glyphosate) or Garlon 3A or Vastlan (triclopyr)	50%, 1:1 mix with water	Unlike the oil-based herbicides, water-based treatments are only applied to the freshly cut surface and must be made immediately after the stems are cut. A water-soluble colorant should be added to improve tracking and avoid skips and duplicate treatment.
Hack and Squirt	Year-round (not recommended during periods of heavy sap flow)	Aquaneat (glyphosate) or Garlon 3A or Vastlan (triclopyr)	50%, 1:1 mix with water	Hack-and-squirt treatments made during the dormant season should girdle the stem. If applied during periods of active growth, the cuts should be spaced with up to 1 inch between them. Apply mixture to cuts with a handheld sprayer.

effective, it must be followed with an herbicide application to cut surfaces or the foliage of resprouts.

Oil-based herbicide formulations (1:4 mixture) can be applied to the cut surface and the sides of the stump anytime following cutting, while water-based (1:1 mixture) treatments should be applied to the freshly cut surface immediately after cutting. Treating resprouts with a fall foliar herbicide application (or application the following growing season) is an alternative to treating cut stumps when immediate application of the herbicide to stumps following cutting is not practical or possible.

Foliar herbicide treatments with a backpack sprayer are an effective means of treating sites with a low to moderate density of trees that are less than 10 feet tall. An effective foliar herbicide mixture for Callery pear is a combination of glyphosate and water-based formulations of triclopyr. The advantage of this mix is that you can treat any invasive targets you encounter during your operation, including invasive shrubs such as autumn olive, bush honeysuckles, and multiflora rose. Many other herbicides are recommended for this species in agricultural settings, but they are not labeled for forest or natural area use. Always read the herbicide label and follow application recommendations.

Basal bark treatments are effective against Callery pear and can be applied throughout the year, exception when snow or water prevent spraying to the ground line, to stems under 6 inches in basal diameter. Basal bark treatments use a concentrated solution (1:4 mixture) of the herbicide triclopyr ester in basal oil applied to the entire circumference of the lower 12 to 18 inches of the intact stem, treating farther up on larger stems. Ready-to-use triclopyr ester products are also available, no mixing required.

On stems greater than 6 inches, it is advisable to switch to the hack-and-squirt herbicide application method. This method is a highly targeted approach that uses a minimal amount of herbicide. A concentrated herbicide solution (1:1 mixture) is applied to fresh cuts in the stem, usually made with a hatchet. Downward-angled cuts are made to the stem at a convenient height below the lowest live branch. When hack and squirt is conducted during the dormant season, cuts should completely girdle the stem; during the active growing season, the cuts should be spaced approximately 1 inch apart. Using a hand sprayer, apply the water-based glyphosate or triclopyr solution, filling the cuts but avoiding excessive runoff.

Callery pear is very persistent and will likely reinvade areas where it has been removed as long as a seed source remains nearby. This makes constant surveillance a necessity. Removal of reoccurring isolated individuals is much easier to accomplish as part of a regular maintenance program. When planning your initial control approach, aim to "save the best," or begin work in the least invaded sites and areas where desirable native vegetation is already present and able to compete. This approach to invasive plant control will be more successful over a larger scale, not only producing an outcome of higher ecological value, but also creating a much greater sense of accomplishment.

Prepared by Skylure Templeton, Art Gover, Dave Jackson, and Sarah Wurzbacher. Reviewed by Norris Muth, Amy Jewitt, and Andrew Rohrbaugh.

extension.psu.edu

Penn State College of Agricultural Sciences research and extension programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.

Where trade names appear, no discrimination is intended, and no endorsement by Penn State Extension is implied.

This publication is available in alternative media on request.

Produced by Ag Communications and Marketing

Code EE0390 07/20pod