

Pyrus calleryana [简体中文](#) [正體中文](#)

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Rosales	Rosaceae

Common name

Synonym

Similar species

Summary

Native to Asia, *Pyrus calleryana* is one of the most commonly used ornamental trees in the urban landscape in the United States. Early forms of cultivated *Pyrus calleryana* were thought to be sterile, however with the presence of two or more cultivars in one location, fruit set is increased for most cultivars. Thought to be a very low invasive threat as recent as the early 1990's, cultivars of *Pyrus calleryana* are producing viable seed banks at an increasing frequency and now are considered invasive in several states. The extent of the ecological impact of this increasingly invasive species is yet to be seen in the United States, but in general *P. calleryana* can disrupt the establishment of middle to late successional species in disturbed areas.



[view this species on IUCN Red List](#)

Species Description

Pyrus calleryana is a medium sized, deciduous ornamental tree with an upright conical form, sometimes spreading with maturity, reaching 10 to 20 meters in height. Leaves are alternate, simple, heart shaped to ovate or broad ovate with crenate margins; glossy and dark green in color on top, paler light green on bottom; leathery and glabrous with an acuminate tip and finely serrated margins. Flowers appear in large clusters about 7.5 centimeters in diameter, before or with leaves in spring, white in color and very attractive. Fruit consists of small pome about 1.5 centimeters in diameter, olive-brown to tan in color speckled with tiny russet dots; resembles a tiny pear, very bitter. Each fruit typically contains 2-6 seeds. Twigs are reddish-brown to grey with large, ovate, fuzzy terminal buds about 0.5 to 1.5 centimeters in length on branch tips and spur shoots. Bark is light brown to reddish-brown and smooth with lenticels when adolescent becoming greyish-brown with slight furrows and scaly ridges with maturity (Brand, 2001; Ohio State University, 2008; Seiler *et al.* 2008).

Notes

There are an increasing number of cultivars of *Pyrus calleryana*. Some of the most common commercially available cultivars are Aristocrat, Autumn Blaze, Bradford, Redspire and Cleveland Select which is also known as Chanticleer, Select, or Stone Hill. Characteristics of individual cultivars are often predictable, such as expected fruit set and seed viability, but crosses of these cultivars produce trees that reveal traits not characteristic of the individual cultivars they were derived from, such as forming dense thorny thickets (Ohio State University, 2008; Culley & Hardiman, 2007).

Lifecycle Stages

Pyrus calleryana is a short to medium lived species, often living to age 25 to 30 if pruned correctly and reaching sexual maturity around age 3. Fruits take months to mature, staying on the tree until autumn. Seeds need a period of cold stratification for viability. Seeds exhibit secondary dormancy if exposed to warm temperatures in late winter, making seed banks more viable (Culley & Hardiman, 2007; Swearingen et al. 2002; USDA NRCS, 2008).

Uses

Since commercial introduction in 1962, *Pyrus calleryana* is one of the most commonly planted ornamentals in the United States. It is prized for its early spring flowers, rapid growth and fall color (Culley and Hardiman 2007). *P. calleryana* is also used as graft stock, and as a pollen donor for commercial pear production. *P. calleryana* was originally brought to the United States to fight fire blight in the common pear (Culley & Hardiman, 2007; USDA ARS, 2008; Vincent, 2005).

Habitat Description

While *Pyrus calleryana* prefers full sunlight with moist, well drained soils, it can tolerate partial shade in poor soils of variable pH, drought, heat, pollution and restricted or shallow rooting zones and is highly disease and pest tolerant. *Pyrus calleryana* has a low shade tolerance, rarely being found in the understory in the wild and can not survive temperatures below -28 degrees Celsius; recommended for USDA hardiness zones 5-9 (Culley & Hardiman, 2007; Ohio State University, 2008; Swearingen et al. 2002).

Reproduction

Pyrus calleryana is a perennial tree that starts to flower around age 3. Flower buds are produced in early spring in clusters of 6 to 12 flowers per inflorescence. Each flower can produce a maximum of 10 seeds, however 2 to 6 seeds per flower is more likely. Flowers are highly attractive to insect pollinators. Many cultivars will not often self pollinate, exhibiting gametophytic self incompatibility to a certain degree. In isolation, the cultivar Bradford pear will set fruit at a very low rate and is incompatible with the cultivar Hansen pear and *P. communis*. Planting more than 1 cultivar of any *P. calleryana* species in an area will often greatly increase fruit set (Culley & Hardiman, 2007; Swearingen et al. 2002; Vincent, 2005).

Nutrition

Although it varies between cultivars, *Pyrus calleryana* generally has a medium C:N ratio, a medium fertility requirement, a low CaCO₃ tolerance, no anaerobic tolerance, a pH range of 5 to 7.5, and requires a minimum of 35 inches of rain per year (USDA NRCS, 2008).

General Impacts

As an ornamental, *Pyrus calleryana* is one of the most widely planted trees in the United States. Also known as Callery pear, this tree often has structural problems, becoming prone to breakage around age 20. Until recently the species was considered unable to escape from cultivation because of self-incompatibility, vegetative propagation and rare fruit production (Gilman and Watson 1994 in Culley and Hardiman 2008).

However due to increased number of cultivars planted in close proximity in urban landscapes, cross pollination has caused *P. calleryana* cultivars to hybridize. It is well known that intra-specific hybridization can be an important stimulus of invasiveness, allowing hybrids to expand ecological tolerance and invade new niche environments (Culley & Hardiman 2009). Hybridization has allowed *P. calleryana* to produce fruits with viable seed, which subsequently are dispersed by European starlings and other wildlife. As a consequence increasing numbers of wild individuals in natural areas are being found (Culley and Hardiman 2007). *Pyrus calleryana* often invade disturbed areas and can disrupt the establishment of middle to late successional species, sometimes forming dense thorny thickets that are impenetrable to humans (Culley & Hardiman, 2007; Vincent, 2005).

Management Info

Preventative measures: Swearingen *et al.* (2002) recommend not planting *Pyrus calleryana*. The root stock of grafted plants can sprout and reproduce by crossing with the upper scion. Sucker growth should be promptly removed to prevent possible cross pollination with the scion (Culley & Hardiman, 2007).

Physical: Pull up seedlings by hand or with a gardening tool which helps capture the roots. Cut down trees and immediately treat entire surface area of cut stump with a systemic herbicide such as concentrated glyphosate or triclopyr, following all labeling instructions, to prevent resprouting. Adult trees can be girdled in spring or summer by cutting through the bark around the entire circumference of the tree at the base of the tree. Mowing is not effective because of likelihood of resprouting (Swearingen *et al.* 2002).

Chemical: Treat entire surface area of any cut stumps immediately with a systemic herbicide such as concentrated glyphosate or triclopyr, following all labeling instructions, to prevent resprouting. To prevent fruiting of adult trees, spray with ethephon during full bloom; only 95% effective (Culley & Hardiman, 2007).

Principal source: Culley, T.M. and Hardiman, N.A., 2007. *The Beginning of a New Invasive Plant: A History of the Ornamental Callery Pear in the United States*. *BioScience*: Vol. 57, No. 11, pp.956-964. American Institute of Biological Sciences, 2007. (doi:10.1641/B571108)

Vincent, M.A., 2005. *On the spread and current distribution of Pyrus calleryana in the United States*. *Castanea* 70: 20-31.

Swearingen, J. and Reshetiloff, K. and Slaterry, B. and Zwicker, S. 2002. *Plant Invaders of Mid-Atlantic Natural Areas*. National Park Service and U.S. Fish & Wildlife Service, Washington, D.C. pp. 82.

Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

Review: Theresa M. Culley, Assistant Professor Department of Biological Sciences University of Cincinnati, Ohio USA

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ALIEN RANGE

[1] AUSTRALIA

[25] UNITED STATES

BIBLIOGRAPHY

11 references found for *Pyrus calleryana*

Management information

Culley, Theresa M. and Nicole A. Hardiman., 2009. The role of intraspecific hybridization in the evolution of invasiveness: a case study of the ornamental pear tree *Pyrus calleryana*. *Biol Invasions* (2009) 11:1107-1119

Culley, T.M. and Hardiman, N.A., 2007. *The Beginning of a New Invasive Plant: A History of the Ornamental Callery Pear in the United States*. *BioScience*: Vol. 57, No. 11, pp.956-964. American Institute of Biological Sciences, 2007. (doi:10.1641/B571108)

Summary: This article is a comprehensive look into the growing invasiveness of *Pyrus calleryana* including history, biology, distribution, control, and implications of invasion of the species, (in the United States).

Available from: http://www.redorbit.com/news/science/1211665/the_beginning_of_a_new_invasive_plant/index.html [Accessed on 18 February 2008]

Swearingen, J. and Reshetiloff, K. and Slaterry, B. and Zwicker, S. 2002. *Plant Invaders of Mid-Atlantic Natural Areas*. National Park Service and U.S. Fish & Wildlife Service, Washington, D.C. pp. 82.

Summary: This source provides summaries of background, distribution, ecological threats, description, biology, prevention, and control of many invasive species in the Mid-Atlantic United States.

Available from: <http://www.nps.gov/plants/alien/pubs/midatlantic/pyca.htm> [Accessed on 18 February 2008]

USDA, NRCS, 2008. *Plants Database, Plants Profile for Pyrus calleryana Decne., Callery pear*.

Summary: Available from:

<http://plants.usda.gov/java/nameSearch?keywordquery=Pyrus+calleryana&mode=sciname&submit.x=12&submit.y=8> [Accessed on 18 February 2008]

Vincent, M.A., 2005. *On the spread and current distribution of Pyrus calleryana in the United States*. *Castanea* 70: 20-31.

Summary: This article is one of the most recent publications on the increasing invasiveness of *Pyrus calleryana*, including background, identification, biological, and management information for the species.

Available from: http://findarticles.com/p/articles/mi_qa4060/is_200503/ai_n13634749 [Accessed on 19 February 2008]

Global Invasive Species Database (GISD) 2024. Species profile *Pyrus calleryana*. Available from:

<https://www.iucngisd.org/gisd/species.php?sc=1389> [Accessed 06 May 2024]

General information

Barker, J. and Randall, R. and Grice, T. May, 2006. Weeds of the future? Threats to Australia's grazing industries by garden plants. Co-operative Research Centre for Australian Weed Management. Meat & Livestock Australia Limited, Locked Bag 991, North Sydney NSW 2059.

Summary: This report identifies hundreds of garden species that may present a threat to Australia's grazing industries if they were to naturalise.

[Brand, M.H., 1997-2001. *Pyrus calleryana*, Uconn Plant Database of trees, shrubs, and vines.](#)

Summary: This site gives a concise summary of identification factors and commonly found cultivars for *Pyrus calleryana*.

Available from: <http://www.hort.uconn.edu/plants/p/pyrcal/pyrcal1.html> [Accessed 18 February 2008]

[ITIS \(Integrated Taxonomic Information System\), 2005. Online Database. *Pyrus calleryana* Decne.](#)

Summary: An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals. Available from:

http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=504706 [Accessed on 18 February 2008]

[Seiler, J.R. and Jensen, E.C. and Peterson, J.A., 2008. Virginia Tech Forestry Department. Callery pear.](#)

Summary: This page is a fact sheet from the Virginia Tech Dendrology site. These fact sheets are excellent sources of plant identification facts.

Available from: <http://www.cnr.vt.edu/dendro/dendrology/syllabus/factsheet.cfm?ID=132> [Accessed on 18 February 2008]

[The Ohio State University, 2008. *Pyrus calleryana*, Callery pear. Plant Facts.](#)

Summary: This site gives a brief summary of plant facts for *Pyrus calleryana*.

Available from: http://www.hcs.ohio-state.edu/plantlist/description/py_ryana.html [Accessed on 18 February 2008]

[USDA, ARS, 2008. *Pyrus calleryana* Decne. National Genetic Resources Program. Germplasm Resources Information Network \(GRIN\), February, 2008. National Germplasm Resources Laboratory, Beltsville, Maryland.](#)

Summary: This taxonomy website, provided by the USDA, is a great source for common names and some distribution information of plants.

Available from: <http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?30463> [Accessed on 18 February 2008]