

# Old Trees

## Valuable Living Witnesses of our History

by Alfred Traverse

*Note from the editor: While Osage Orange is not native to Pennsylvania it was introduced very early and has an interesting history, which includes use by the Osage Indians. Charles Fergus chose to include it in his Trees of Pennsylvania as one of the Common Introduced*

*Trees and we have chosen to print this article due to its extensive research and detailed history of one particular tree which lives in State College, Pennsylvania.*

*As always, we are interested in receiving your comments on this or any article which we publish.*

Many readers will have seen cross-sections of very old trees, with arrows pointing to particular annual rings, noting for example that the ring of wood for 1776 was formed during the time that Thomas Jefferson was writing the Declaration of Independence. The sequence of thickness and thinness of tree rings has long been a basis for studies of past climates at particular dates and also to date archeological sites in which ancient timber has been recovered. Study of the wood of specific tree rings for the isotopes of carbon and oxygen, elements that comprise most of the substance of wood, as well as investigation of traces of metals such as copper, zinc and lead from such annual rings, show great promise of yielding accurate information about the environment in which a tree grew at a particular date.

In the past longevity of individual trees of some species has been used to advantage. Figure 1 illus-

trates an example of the use of old trees by surveyors, to mark precise locations — a sort of forerunner of “GPS” records. One of the witness species commonly selected because of its abundance and the splendid hardness of the wood, even after death of the tree, was the American chestnut (*Castanea dentata*). Wood is mostly non-living, even in living trees, but the chestnut’s living tissues in the bark and twigs fell prey to a fungus blight and the species is now rare in North American forests.

In State College, Pennsylvania, there still are trees, especially on the Penn State campus, that are the only living witnesses of local history. The magnificent ginkgo tree across Pollock Road in line with the back of the Old Main building, very near Chandlee Lab, is one of the oldest and largest specimens of the species in Pennsylvania and it was surely in place when George W. Atherton was president of the University (1882–1906).

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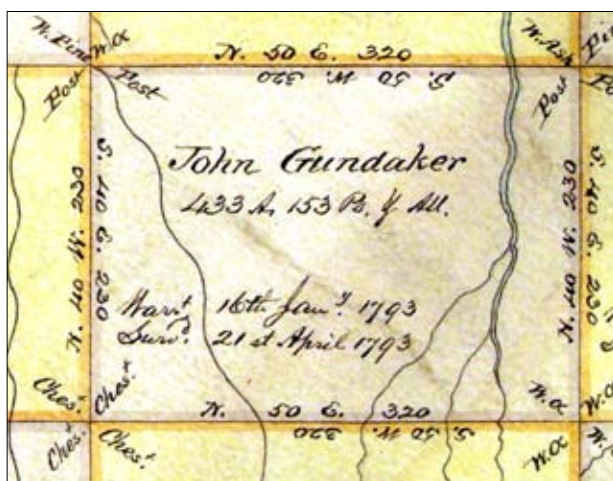


Figure 1. Part of a land plot near Philipsburg PA from the 1790s. Note corners identified by trees.

# Announcing our newly updated website [www.pawildflower.org](http://www.pawildflower.org)

At long last, our new and improved website is up and running. We hope you will find the website much more functional and easier to navigate. As a member, you will have access to post images, utilize the forum, and view newsletters. We also now have a calendar feature to help keep you posted of upcoming events. We have established security so that non-members can view images in the Image Gallery, view the calendar, and also post discussion items to the Forum. However, only members will be able to actually post photos in the Image Gallery and access the Newsletters.

Therefore, you will need to create an account on the website in order to utilize these non-public features.

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- Access the website.
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Once you have received confirmation of your account, you can then post images and view the newsletters. If you wish to receive your newsletter electronically instead of by mail, you can sign up at that time by going to the Newsletter page and clicking the Subscription link.

Calendar items can be sent to Debra Grim or Diane Albright.

We welcome your feedback!!

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*Dear Colleagues,*

I would like to draw your attention to the world's largest collaborative project on invasive species; it may be of particular interest to educators, conservation groups, and resource managers.

Do you want to be part of the world's largest scientific research project on invasive species? The 'Global Garlic Mustard Field Survey' is an international collaboration aimed at obtaining much-needed data on the abundance and distribution of Garlic Mustard (*Alliaria petiolata*) across its native and introduced ranges. In our first field season last year, we received measurements and seed samples from 65 populations, with a majority from Europe — already one of the largest systematic field surveys of an invasive species. Our goal for this summer is 150 or more, with a stronger emphasis on the southern and mid-west to western United States.

This year we are hoping to increase participation among educators, as well as land managers and 'citizen-scientists' who may not have much formal science training. The survey involves a simple protocol that can be followed directly or incorporated into field courses and nature surveys. A population takes two people about 2–4 hours to measure. We are also planning to develop internet-based teaching modules and tools to aid with monitoring and managing this invasive plant. The sampling protocol, along with contact information is available at the Global Garlic Mustard Field Survey website: [www.GarlicMustard.org](http://www.GarlicMustard.org) (note that you do not need to log in to the site to participate).

Ideal sampling time is 2-4 weeks after flowering finishes and ranges from early June in southern states (e.g. OK, AR, AL, GA, SC) and lower altitudes to mid to late July in northern states (e.g. OR, WA, ID, ND, MN, WI, MI, VT, ME), higher altitudes and Canada.

Please contact me if you would like to participate.

North American Coordinator

Dr. Robert Colautti

Biology Department

Duke University

[rob.colautti@duke.edu](mailto:rob.colautti@duke.edu)

# Old Trees

His grave is on the other side of Pollock, only about 75 yards from the ginkgo. The ginkgo and many other notable trees within easy walking distance of Old Botany Building were at least in part planted for their botanical teaching value. Many were planted about 1870, most likely under the direction of Penn State's pioneer tree-planter, William G. Waring, who surely would have been called the Penn State arborist, had that title existed then. There is, for example, right beside Old Botany, a magnificent specimen of *Sciadopitys verticillata*, surely one of the best in North America. That tree represents a unique species of evergreen

Japanese conifer, the only species remaining of a tree family that was common in Europe many millions of years ago, as we know from abundant fossils. Because of the shape of the groups of leaves, it is called "umbrella pine" or "umbrella fir," though it is neither a fire nor a pine.

In the borough of State College there are also many magnificent, very old trees, mostly on private property, because street-tree planting by the borough government did not begin in earnest until the 1920's, and was at first rather unimaginative, consisting largely of hundreds and hundreds of sugar maples.

In recent years I have been following the history of a fascinating witness specimen of Osage orange tree



Figure 2. The subject tree in 2007.

CONTINUED FROM PAGE 1  
*(Maclura pomifera*, a member of the mulberry family), which has obviously been at its location in downtown State College for more than a century and not only has "witnessed" much of the history of Penn State/ State College but by its nature has much to say about how things have changed. This tree was unfortunately felled fairly recently. It stood on the east side of Pugh Street, near the corner of Pugh and Foster Avenue (see Figure 2).

The tree was very probably planted there because of a custom in rural Pennsylvania in the 19<sup>th</sup> century when Osage orange was widely planted by landowners to be part of an enclosure around pastures and other pieces of ground that they wanted to fence off. If planted close together, the trees could have thick wire strung from tree to tree. Then, because of the species' tendency to produce suckers from the base that take root and make an additional cloned tree, a natural fence impenetrable to livestock resulted. The remains of such Osage orange fences, often enclosing what had been a pasture, are still common in rural Centre County.

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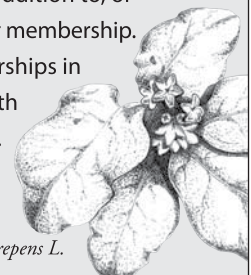
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# Old Trees

CONTINUED FROM PAGE 3

Remember that the area of downtown State College south of Beaver Avenue remained quite rural until well into the 20<sup>th</sup> century. Even the 1906 insurance maps of the area show very few and small buildings in the area near the corner of Foster and Pugh.

The tree on Pugh Street just north of Foster Avenue (location shown by arrow 1 in Figure 4) quite likely was part of an enclosure that linked up with a partial row of Osage orange trees that still runs along an alley extending more or less north/south halfway to Beaver Avenue from Foster. The alley originally ran the whole way between the two streets, as can be seen in Figure 4, arrow 2. The remains of the alley and of the Osage orange row are now along one side of the Delta Upsilon Fraternity house — see Figure 3 to get a glimpse of the hardy remnants of the old living fence. Possibly, the Osage orange trees enclosed a piece of ground that may have served as a small pasture



Figure 3. Trees of old osage orange row (arrow 2, Figure 4).

for horses, which were abundantly quartered in State College at the time. It is interesting that plots of the streets and alleys of State College show an alley labeled on maps (but not on current street signs) as “Osage Alley,” not far from the Delta Upsilon living fence fragment, likely indicating another fence-like row of the trees — though none of them now survives (see Figure 4, arrow 3).

The freshly cut stump on Pugh Street showed a minimum of about 85 years in annual rings (see Figure 5b), but there were really multiple stems fused together. Under these is clear evidence of a still older stump or stumps that gave rise to them. We can reasonably conclude that this tree was likely first planted well over a century ago, probably around 1880 (see also Figure 5b).

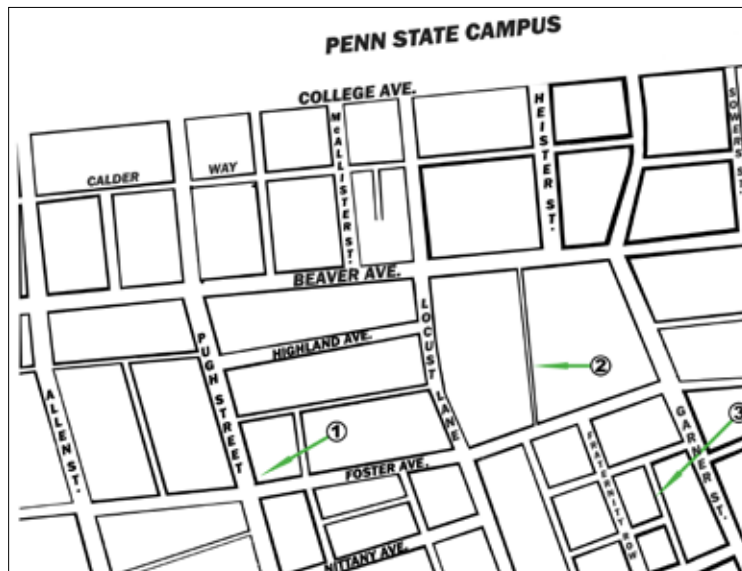
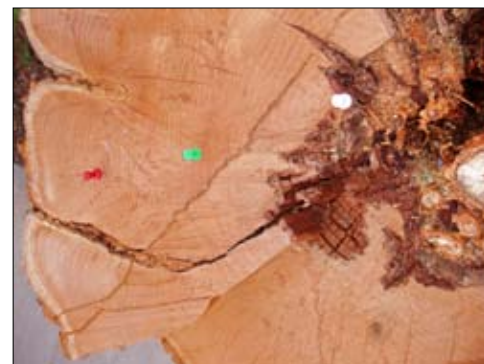


Figure 4. State College, showing location of subject tree (1), old osage orange row (2) and Osage Alley (3).

Why did this one tree of what was doubtless a row along Pugh Street survive, while the others did not? *Maclura pomifera* (Osage orange) is what botanists call a “dioecious plant,” which means that it has male and female trees — unlike most trees, which are either monoecious, having male and female or, more often, bisexual flowers, on the same trees. Both male and female Osage orange trees make very inconspicuous flowers on the naked spring branchlets, before leaves appear. However, the female trees produce a spherical fruit the size of a softball weighing from half a pound to a pound (see Figure 6). The fruits are of interest to historically minded biologists because there seems to be no extant animal that is a “customer” for them. Modern North American animals have little or no interest in the fruits. It has been suggested that ground sloths or mastodons may have relished them. In any case, the “oranges” were one reason why



Figure 5a, above. Stump of subject tree, as it appeared immediately after felling. Figure 5b, below. Close-up of stump, showing multiple stem origin and countable rings.



rural people could so easily establish an Osage orange fence. The fruits are just full of seeds that germinate very readily. All one had to do to plant a row of the trees was to cut the fruits into sections, as with a seed potato, and plant them. A row of the sections produced a row of seedlings.

The fruits are not compatible with modern city life. If one falls on a car it is almost certain to leave an impression, and if one falls on a person it may break her glasses, or cause some other serious inconvenience. The tree on Pugh Street is a male, and it undoubtedly was allowed to live because it never made any of the dangerous fruits. Had it been a female, it would have been removed long ago because of these fruits. It is interesting that of all the trees in the alley extending from Foster Avenue toward Beaver, mentioned above, only one of the sizable remnants



Figure 6. Branch of tree in fig. 3, showing large spherical fruit with man's wristwatch for scale.

bow-manufacture. The name of the tree in Texas/Louisiana is "bois d'arc" — pronounced in Texas as "boh-dark" referring to the archery connection of the tree.

Although the tree on Pugh Street was felled, Osage orange is a very resilient organism and this one has made sucker shoots from the stump (see Figures 7a and b). Any one of the shoots would soon become a new Osage orange tree, a clone of the original if allowed to develop. It is a very interesting organism, with a long connection to our community, and because it is a fruit-free male, it is unlikely to harm vehicle or human. It would be nice if the old witness were allowed to regenerate itself.



Figure 7a, left. Stump with many 3-ft. suckers in 2008. Figure 7b, right. Stump with 7-ft. suckers in 2009.

is a female that regularly makes fruit. There are often cars parked under this tree, and one wonders about that! Probably all the other females were removed long ago after cars were dented or pedestrians beamed.

*Alfred Traverse is a paleobotanist/palynologist, former member of the Tree Commission of the Borough of State College, whose first scientific paper, on an extinct Paleozoic tree from Iowa, was published in the American Journal of Botany in 1950.*

Pennsylvania

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## Calendar of Events

**July 17, Saturday — Hal's Prairie**, Carlisle PA (Cumberland County). Hal Gardner has created an 11-acre Illinois prairie which is coming along nicely, helped by a controlled burn this spring. We can expect to see blooming species such as hairy wild rye, Canada wild rye, wild bergamot, hairy mountain mint, giant hyssop, Virginia wild rye, western ironweed, nodding wild onion, big bluestem, swamp milkweed, Canadian milk vetch, Illinois bundleflower, evening primrose, royal catchfly, rosinweed (*Elymus villosus*, *Elymus canadensis*, *Monarda fistulosa*, *Pycnanthemum pilosum*, *Agastache scrophulariaefolia*, *Elymus virginicus*, *Vernonia fasciculata*, *Allium cernuum*, *Andropogon gerardii*, *Asclepias incarnata*, *Astragalus canadensis*, *Desmanthus illinoensis*, *Oenothera biennis*, *Silene regia*, *Silphium integrifolium*). Many other species will either be blooming later or finished at that time. Meet at Hal's at 7 a.m. to beat the heat. Those who wish to carpool from the State College area contact Debra at [dgrim@diagnosticsplus.com](mailto:dgrim@diagnosticsplus.com) or

814-355-4102; others contact Hal Gardner at [hrlgrdnr4@aol.com](mailto:hrlgrdnr4@aol.com) or 717-258-6932 for directions. Depending on the response, we will determine whether to spend the night beforehand or drive down early that morning.

**Late July-early August** — Sarah Miller will lead a field trip to look at grasses and sedges. More information will be posted on the website.

**August 14, Saturday** — The Muhlenberg Society will return to Centre County to visit the Big Hollow Prairies to find *Silphium trifoliatum* (Whorled Rosinweed), *Solidago rigida* (Stiff Goldenrod), and *Bouteloua curtipendula* (Side-oats Grama) in bloom. Meet at 12 noon at the Boalsburg Military Museum Parking Lot. Harry Henderson, [harry@meteo.psu.edu](mailto:harry@meteo.psu.edu).

**Late August, early September** — Leo Sammis will lead a fern field trip to Martin Gap (Rocky Ridge Natural Area). Check the website for more details.

If you do not have access to the website, call Debra Grim at 814-355-4102 for more details.