Osage-orange fruits probably eaten by mastodons

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Garden Tales

It seems that everyone is intrigued by Osage-orange fruits, which look like oversized, bumpy tennis balls. I certainly was fascinated when I was little — we were always excited to find these bright-green, grapefruit-sized fruits when they fell from a local tree every autumn. But, somehow we got the name wrong, and called them osane-oranges. "Monkey-brains" was another useful nickname.

We liked to throw the Osage-oranges at each other until they broke open, at which point we would rediscover that the white sap inside was very sticky and almost impossible to remove. I still like to smell these fruits, which have a surprisingly light and fresh scent.

Now I know more about this unusual species. Osage-orange is a thorny tree with the scientific name *Maclura pomifera*, native only to northern Texas (and bits of adjoining Arkansas and Oklahoma). Its common name comes from the Osage Indians of that region. It's a member of the mulberry family (Moraceae), which also includes mulberries and figs, and the fruit develops from a ball of small female flowers. Male and female flowers are on separate trees, so if you want to have Osage-orange fruits to play with, it helps to plant both a female tree to bear the fruits, and also a male tree to provide pollen. However, this species is also apomictic, which means that the fruits can actually develop without fertilization.

Humans can't eat Osage-oranges, but we can use them to get rid of roaches. Scientific research has demonstrated that chemical compounds in the fruits repel German cockroaches (and also maize weevils).

What would really have thrilled my childhood self, and is still exciting, is that Osage-orange fruits were probably the food of extinct large animals like mastodons, which disappeared about 13,000 years ago during the Pleistocene megafauna extinctions. It's hard to imagine mastodons running around North America (along with mammoths, giant sloths, and 8-foot-long giant beavers), but what else had a mouth large enough to eat an Osage-orange? Most fleshy fruits evolved to attract animals which eat the fruit and then disperse the seeds.

However, no animals living today eat Osage-orange fruits, which means that the seeds are no longer being dispersed. A possible exception is horses, which are said to eat Osage-oranges (another common name is "horse apple"), and horses were once native to North America. (Squirrels, with their small mouths, merely tear the fruit apart to eat the seeds, which is not going to help in dispersing the seeds!).

An intriguing book, "The Ghosts of Evolution" (Connie Barlow, 2000), describes several "anachronistic fruits", including Osage-orange, whose large-animal dispersal agents are now extinct, leaving the trees without their evolutionary partners. Osage-orange once grew throughout much of North America before the Pleistocene animal extinctions, after which it disappeared from most of its range possibly because there were no longer any animals that spread its seeds.

An early name used by French settlers for Osage-orange was "bois d'arc" ("wood of bow"), corrupted to "bodark", from its use by Native Americans for making excellent bows. (The name "Ozark" may also derive from this). The wood is also very rot-resistant, and was used for railroad ties and carriage wheels. Another common name, "hedge-apple", refers to the former use of these trees as a living fence, thanks to their thorns and root-suckering habit.

Before barbed wire, Osage-oranges were commonly planted for this purpose, which

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involved pruning the trees and weaving their branches together. One place to see a row of several large Osage-orange trees in Delaware is on State Street in Dover, across from Kent General Hospital.

You can see similarities to Osage-orange in some of its mulberry family relatives, such as tropical breadfruit and jackfruit (*Artocarpus spp.*) which have very similar-looking fruits, and rubber fig (Ficus elastic) which has sap that was formerly used to make rubber.

Next time you encounter a large, bright-green, nice-smelling Osage-orange fruit, imagine an elephant-sized mastodon reaching down to eat this morsel, and then dispersing the seeds, thousands of years ago.

On the campus of Delaware State University, the Claude E. Phillips Herbarium is Delaware's center for research, education, and outreach about plant identifications, locations, and uses. Call 857-6452 (Dr. Susan Yost, Herbarium Educator) to arrange a tour of the herbarium, or for more information about this article.

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The large, bright green, bumpy fruits of Osage-orange (*Maclura pomifera*) were probably food for extinct mastodons. The seeds and sticky white sap can be seen inside the cut-open fruit.