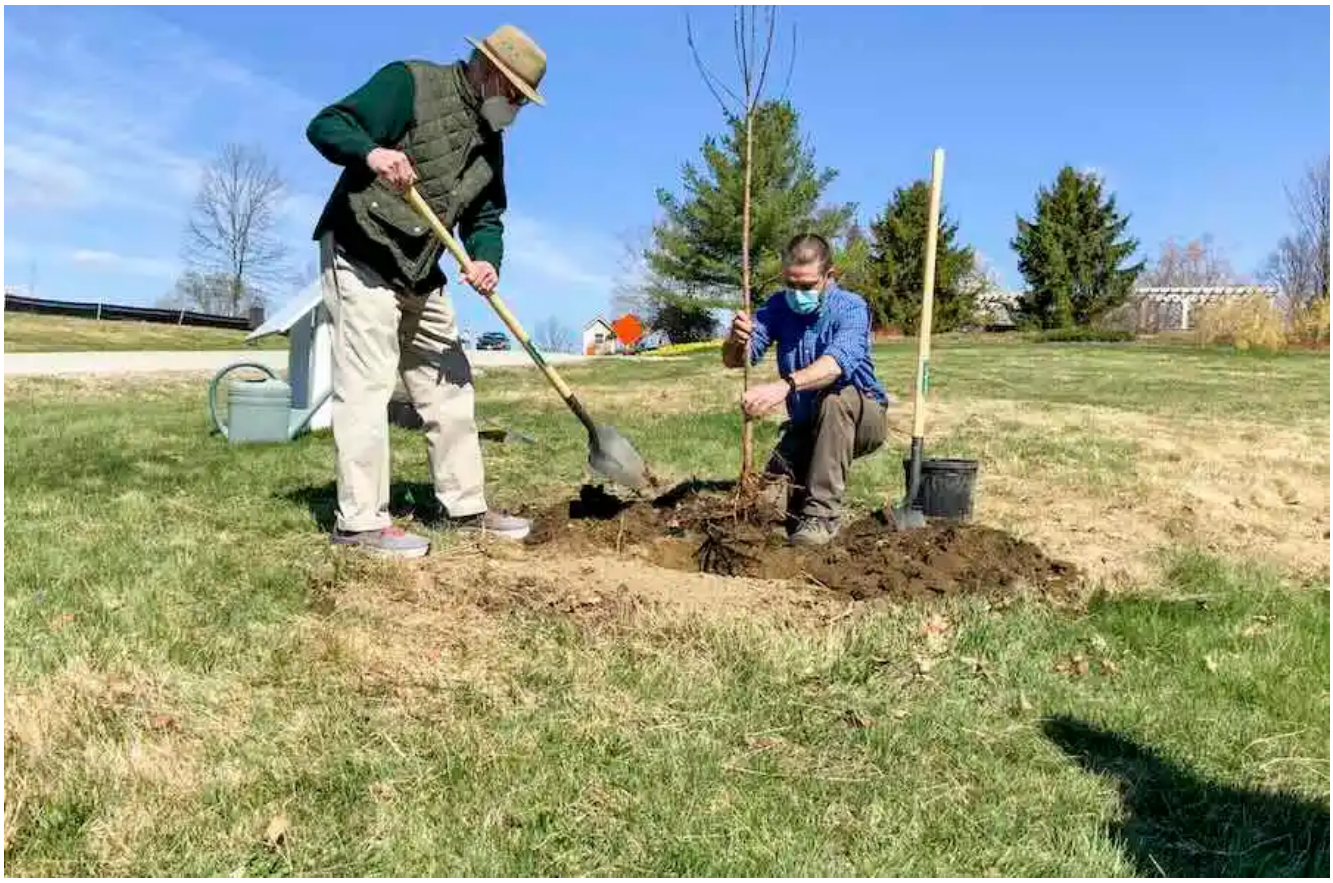
ETCETERA

historic apples get a new start, with mark richardson



A COLLECTION OF historic apples that was threatened by disease is having a second act at the New England Botanic Garden at Tower Hill in Boylston, Mass., where a three-year-long restoration of their orchard of 119 antique varieties has just been completed.

It's a story of going the distance to see those old varieties into the future in the age of climate change, and of what goes into making a successful forward-looking orchard—from smart watering methods to native underplantings and more.

Mark Richardson, New England Botanic Garden's Director of Horticulture, oversaw the recent apple orchard restoration project there, and he talked to me about what imperiled the historic collection, what it took to save them,

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historic apples, with mark richardson

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that's still part of its name—you drive up the hill, and I think it was kind of on the way up, wasn't it? It's on a slope, isn't it, the orchard?

Mark: It is. Absolutely. It was one of the first things you could really see when you came around the corner as you traveled up the driveway to visit the garden, before you got to the parking lot, before you got out of your car to enter the garden. It marked the entrance to the garden quite well, the orchard did.

Margaret: Yeah. You joined New England Botanic Garden in 2018, I think from Native Plant Trust, the former New England Wild Flower Society. And the orchard was already in trouble. How old was it then? And set the scene for us. What had happened when you arrived? What was the uh-oh? What was the scene?

Mark: I joined the staff here in September of 2018, after spending about six years with the Native Plant Trust. I was aware of the orchard **[above, the former orchard in bloom],** and the sort of plight of the orchard. I moved to the area in 2012 to take the job at Native Plant Trust and got to know Joann Vieira, who was my predecessor here, and learned a little bit about the struggle that Joann was having with trying to keep the apples going.

What happened was right around 2010, the staff at the time saw the first widespread evidence of fire blight in the orchard **[below, a tree that succumbed to it].** The orchard has a really long and rich history. It was started by a gentleman named Stearns Davenport, who was from the area. He had a small farm in South Grafton, Mass., which is really just down the street from us here.

unmanaged apple trees across the state. It had a couple of different purposes. One was to provide jobs for people during the Depression, the other was to provide firewood for people. But what he realized was in some cases he was cutting down maybe the last representative of a unique variety of apple that really grew no place else.

So he got to thinking, and really wanted to try to preserve this piece of our cultural heritage by collecting apple trees of different varieties, and growing them at his home orchard in Grafton. He started that work in the ’30s and ’40s, worked with some of the faculty at UMass to develop a list of… I think it was a list of a hundred varieties that they really felt like were the most important to collect. He set out to find these. Some of them were really difficult to find; in some cases there was just a single tree that was out there. It was unique for some reason.

He wanted to collect it, and so he set out to collect these trees from all over the place. His own personal collection by the time of his passing was right around 70 trees, 75 trees, I think are what he had in his orchard in Grafton. He was really forward-thinking. He was a longtime supporter and member of the Worcester County Horticultural Society, which owns and operates the botanic garden here.

Margaret: And it's either the oldest or one of the oldest such societies in the country, I think.

Mark: It is, yeah.

Margaret: It's a long history of horticulture.

Mark: Definitely. Long history. We used to be headquartered in Worcester. We moved to this location to become Tower Hill Botanic Garden in the mid-1980s. And by that time, Mr. Davenport had passed away. He passed away in, I believe the early 1970s. But before he passed, he convinced, or I'll say he encouraged the horticultural society to take over management of his orchard.

So we essentially have owned the trees since I think the '50s and '60s. And in the '60s and '70s, the orchard was actually moved to Old Sturbridge Village, because the horticultural society didn't have its own piece of property to have an orchard. They worked with Old Sturbridge Village to relocate the

Margaret: And so it eventually made its way to what became Tower Hill.

Mark: It did. It was one of the very first projects that happened here once the society bought the property here. So by 1989, 1990 is when the orchard was first planted. It really did quite well for a period of almost 20 years before fire blight really moved in. And so at that point in 2010, the trees were around 20 years old. Many of them were really ravaged by fire blight. We had to go to pretty exhaustive lengths to protect the trees just to keep the germplasm alive.

But we at that point ceased the scion distribution program. So for decades we'd been collecting scionwood from the trees by request, and distributing that wood, so that other orchard enthusiasts could grow these really unique and special trees in their own orchards.

Margaret: So let's just explain to people one of the reasons we've been talking about this collection that a gentleman had, and then moving it to Sturbridge Village. You can't take a seed from an apple and make the same apple tree. So it has to be asexual propagation. It has to be from wood, from scionwood as you're just about to talk about or you're just talking about. And that's the way that the same variety can be carried on through history, generations.

Mark: Got it.

Margaret: So it's literally a part of the old tree generation. It's not a baby of the tree, it's part of the old tree.

someone in the 1600s was enjoying. I find that really interesting.

Margaret: So fire blight is a bacterial disease, I think, and I think it strikes plants in the rose family—so not just apples and crabapples, but quinces and hawthorns and, I don't know, spireas, and pears, and shad, *Amelanchier,* I think, and lots of other things, mountain ashes. So lots of other things.

It's something that we think about, we Northern gardeners think about if we get it, it's like a little thing, it's not a big thing. It doesn't kill all the trees. More in the South it can ravage things. But what happened? Why did this suddenly become a deadly situation for you?

Mark: Yeah, that's right. I mean, fire blights, it's endemic to our area. It's always been around, but it was always sort of more of a summer disease that we were concerned about when temperatures were pretty high. But this is really a story of climate change playing out in unique ways. In 2010, if you go back and look at the temperature records from 2010, what you find is we had a really early stretch, or what was considered early at the time, really early stretch of temperatures above 75 degrees Fahrenheit in early May.

During that time period, when the temperature gets above 75 degrees and we've got humidity or moisture, rainfall, at that time, fire blight becomes active. And what's interesting about the disease is it can be carried on the back of a honeybee. And one of the ways that fire blight can get into an apple tree is through its blossoms. So if you find that your trees are blooming at the same time that fire blight is active, then you'll find that fire blight really moves through an orchard really quickly, jumping from tree to tree on the back of a honeybee as it's doing its very important work of pollination.

Mark: Exactly, yeah.

Margaret: So that sort of protected the north from the devastating version of this most of the time, I think.

Mark: That's right. That's right. Once fire blight enters the vascular system of a tree, it can move really quickly. That's one of the reasons that it has the name fire blight. And in fact, when you see evidence of fire blight on a tree, you typically want to prune out that infected wood, and you usually prune back about 2 feet toward the trunk of the tree from where you see the evidence of that damage, because it moves so quickly through the vascular system; you've got to try to get ahead of it.

Margaret: I want to get to some of the prescriptive and what's happened more recently and some of the forward looking stuff. So sort of fast forward when you got there, they'd been treating the trees with, I think, streptomycin.

Mark: That's right.

Margaret: That had limitations because you couldn't really eat the fruit because we don't know what the impact of that would be, and oh my goodness. And as you said earlier, in 2011, they'd already stopped distributing scionwood, which was the point of having this collection was to be able to share and keep it going on in many places for the future into the future years.

ago maybe or something?

Mark: So I started in September of 2018, and one of the first people I met was a gentleman named John Bunker, who started Fedco Trees up in Maine. John is probably this region's foremost apple expert. He's just a brilliant mind. And his own personal collection of heirloom apples is about 300 trees deep.

Margaret: Wow.

Mark: He's done just a tremendous amount of work. His lifetime has really been dedicated to this work and preserving apple varieties, and getting people excited about them. John made it a point to come and meet with me pretty soon after I started here, I think maybe October, about a month after I started.

And he sat me down and said, "So I want to help you restore the apple orchard, but it means you're going to have to cut down all the trees."

Margaret: Oh, deep breath; deep breath, Mark **[laughter].**

Mark: Yeah. So my next meeting was with our CEO, Grace Elton. As someone who'd only been here for about a month or six weeks at that time, I felt pretty comfortable in going to her and saying that we had to cut down all the apple trees **[above, the old trees].** You get a little bit of leeway when you first start in a new job. So I felt that she would receive it O.K. And she did.

So we set out on this path to restore the orchard. And really what it came down to was John and his wife, Cammy, would come the following late winter, early spring, around February, March, and take about 10 pieces of scionwood off of every tree in the collection, which they did.

They brought all that material back up to Maine. Fedco is a cooperative, so they work with a lot of different local growers. So our trees were grown by a nursery that grew small fruits, raspberries, blueberries, other apples, pears, all sorts of different varieties of fruit trees. So the grower there grafted all of our

York called G.890, one was M111, which is a fairly old tried and true rootstock. And the other one was Antonovka.

Antonovka is a standard rootstock. All of our trees are grafted onto semi-dwarfing rootstocks, which mean they'll get about 20 feet tall and that's pretty much about it, which is exactly the size that we want them to be. But apples growing on a standard rootstock can get to be about 40 feet tall, maybe 50 feet tall.

Margaret: And I have five of them in my garden that I inherited. When I came here, they were already 100 and something, and now they're 150 years old. They're 35 feet tall and 40 feet across.

Mark: Yes. So we did about 30 trees on Antonovka and we planted them along the driveway as you come up the hill toward where the parking lot is, because those standard rootstocks live quite a bit longer than the semi-dwarfing rootstocks will. So you mentioned, it sounded like your trees are around 150 years old.

Margaret: Yes, exactly.

Mark: Which is what we hope these will live to be. So that's exciting that you've got some older apples in your home garden.

Margaret: So those are near the driveway because it will be for the future generation's visitors. It'll be this incredible thing to see the grown-out big old apples.

and replace the trees in the collection. We hope to do so on a sort of staggered schedule so that we maybe cut down a third or a quarter of the trees on a three or four year schedule so that we're not taking them all down at the same time. But those grafted onto standard rootstocks will be here for generations, which is pretty exciting.

Margaret: So you're not going to have any fruit any days this fall **[laughter].**

Mark: No. Definitely not.

Margaret: It's not like this is no instant fix and you've backed up the collection in the sense that I imagine there's extra scionwood, whether it's up

knew that your scionwood was successfully creating these young baby trees in Maine, with a several of each and or 10 of each, however many you said, and all that kind of good stuff for safety. **[Above, one of the young trees in place.]**

Mark: That's right. And one thing we also did was Fedco grew a bunch of extra trees for us, and we sold a lot of those trees.

Margaret: Oh, that's sweet.

Mark: Rather than just the scionwood that we've distributed in the past, we sold a couple of hundred trees that spring. So when our trees came in early 2021, we also had bundles and bundles of additional trees that we had sold, the people who were interested in growing these trees at home. So that's great.

Margaret: How big were the trees when you got them from Fedco? What are we talking about? Is it just a whip, so to speak, or what is this?

Mark: Yeah, they're a little bit more than a whip. So most of them were branched. Honestly, some of them were 8 to 9 feet tall where others were just a 3 or 4 feet tall. Remember, each variety is going to grow slightly different from the next. So we had some that were quite tall, some that were quite small, really just depended on the variety and how vigorous the growth is.

But the trees haven't put on a ton of size since we put them in. They all have a drip emitter for irrigation, so we can water it pretty efficiently without

We planted all of them last year with a ton of volunteer help. And we got one volunteer in particular, a woman named Leslie Duthie, who spends really a couple days a week out working in the orchard during the growing season and couldn't have done it without her incredible help.

Margaret: If I plant a young fruit tree, are you protecting it in the winter? Are you doing anything? I assume this is sort of an open area, it's not a fenced area, is it?

Mark: It's not. No, it's not. So definitely some critters that would like to chew on the trunks of the tree. Voles are a concern. Deer also a concern in our area.

collection as well. But we definitely put a wrap around the trees in the winter, and that's to help with a little bit with rodent damage, but also with bucks. So bucks like to rub their animals on the trunks of young trees.

Margaret: The rut; during the rut season.

Mark: You've got it. Exactly.

Margaret: So there's that and you said you put in a very focused watering system, a drip system for each plant. **[Above, the drip system being installed.]** What's on the ground? I think it just used to be grass. I'm trying to visualize years ago seeing it, but it wasn't any… I don't remember. Was it just grass underneath the old trees?

Mark: Yeah. It was sort of minimally managed grass. We're planting a pretty short sort of prairie around the trees. So groundcover strawberries, some great native plants. So *Prunella*, lots of different grasses. A grass that I really like a lot is called *Andropogon glomeratus*. Excuse me, I'm going to draw a blank on the common name, but it's one of our bluestems, bushy bluestem.

Margaret: I was going to say it's a relative of little and big, right?

Mark: Yes, you've got it. So it's a relative of little bluestem, big bluestem. It's still an *Andropogon,* but it's got this amazing seedheads. The inflorescence on it is really cool. It only gets to maybe 18 to 24 inches tall. We'll probably mow a little bit earlier in the season just to keep it a little shorter than that. But lots of other grasses like *Eragrostis*, some *Deschampsia*, few other things that

We mow a short mowing path through it that the orientation or the direction of that path will probably change seasonally. And so it might be really secure as one year, a little straighter the next year. Every year, a little, it'll be slightly different.

Margaret: A new adventure each year **[laughter].**

Mark: Exactly. You've got it.

Margaret: Now, when you're talking about this sort of underplanting, your history, not only with the native plant trust, but also the fact that you're a co-author with Dan Wilder, who also worked there, of "Native Plants for New England Gardens," which is a great reference book for people in the region.

Mark: Thank you.

Margaret: So it sounds like you're drawing on some of that expertise for sure, and figuring out this ground level underplanting for this new orchard, this new old orchard.

Mark: Absolutely. We wanted to have seasonal interest. We want to make sure that we've got some… Not just flowers during the spring when the apples are blooming, but also different points during the season as well. Definitely a lot of plants that are fantastic for pollinator support. Pollinators are so important for apples and also all of the other plants that we like to enjoy, so we want to make sure that we're providing habitat for pollinators and other beneficial

meadow.

So lots of different, I guess, reasons for the plants that we've selected, but certainly trying to go with a pretty exclusively native plant palette around the bottoms of the trees.

Margaret: That's exciting. I think when we spoke the other day, you mentioned to me that adjacent to this, you're also planning to do sort of a beneficials border, this other planting, which I guess would also probably help the treat. Just tell us quickly about that.

there's historically been a minimally managed shrub border between the apple orchard and the lawn garden. And we're planning to renovate that border, hopefully next spring, do some of the work this fall and into next spring.

The idea there is to have something that's pretty low maintenance, but really trying to build an area of the garden that supports wildlife habitat, specifically for beneficial insects—for not just pollinators, but also predatory insects for some of the challenging pest plants that we have.

So there's some inspiration that we're looking at. There are a couple of British designers—one guy named Nigel Dunnett, another named James Hitchmough—who build these really elaborate walls out of found materials and rotting logs, but make them look quite beautiful and stunning.

So big sweeps of individual species that are selected for their low maintenance. Also, beneficial organism support, habitat support, and then also some really interesting walls and features that we create ourselves throughout that border as well. So pretty excited. I think it'll be really beautiful once we're finished, and a nice kind of transition area between the very formal lawn garden and the orchard just beyond.

Margaret: I just was going to quickly ask, we talked about how the fire blight, because of the changing, shifting climate, the trees were more vulnerable. Any other climate change pressures, just quickly that you're seeing at New England Botanic Garden that are on your list?

the growing season started, and we've hardly seen any rain at all this year. And that's on the heels of about 18 inches of rain last July. So it seems like every year—there is no normal any longer. The wild weather swings are certainly a component of the impact of climate change, and that's something we have to learn to live with.

It means building gardens that are resilient, selecting plants that can tolerate extended periods of drought and also infrequent inundation with a ton of water when we get these downpours and really intense storms, and offseason, unusual weather patterns that we just haven't typically seen in our area. Basically all bets are off. We've really got to figure out how to garden in a change in climate, and it's a challenge. So every year is a new challenge it seems.

Margaret: It sounds, again, that your expertise in the native plant world is going to be helpful to you.

Mark: Yeah.

Margaret: So good. Well, thank you for making time today. I know you're always busy and this is no different. It's still garden season. I hope I'll speak to you again soon.

(*Photos by Troy Thompson and NEBG staff, courtesy of New England Botanic Garden*.)

show?

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Tibs September 18, 2022 at 8:33 am

So interesting, and brought back memories of my grandma (b. 1903 on a farm in east central Ohio), telling me about their apple and pear orchard she grew up with. The sheep grazed there and they would always had to watch out for the ram. (Is sheep manure good for fertilize?) She reminisced about her favorite apples, sheepnose, and strawberry. Someone bought a strawberry apple to her that they had found somewhere. She was so excited and shared it with me. I can't remember anything about the apple, but I remember how happy it made Grandma.

Reply

Doreen September 18, 2022 at 10:19 am

Very interesting ! In the past , did they harvest and sell the old vintage apples to the public to help educate about the different flavors ? I hear about the old apples but none are readily available.

Susan L Craig September 18, 2022 at 9:28 am

I am so glad that they are saving these trees!

Reply

Barb September 18, 2022 at 10:06 am

In my neck of the woods, we have Schutt's Apple Mill, a family owned business that continues to cultivate a Russet apple orchard with the original stock being brought over from Germany. It first opened its doors in 1918 by Paul "Great Grandpa" Schutt.

Reply

Janice Brewer Smith September 18, 2022 at 10:33 am

I found this so interesting. We live in the Applebelt of upstate NY around Lake Ontario. Our kids went to Cornell so apples are of huge interest to us. Learned a lot. Thanks

Reply

Diane L. September 18, 2022 at 7:55 pm

This was a great podcast. Thank you. It certainly is inspiring to imagine all the hard work that has gone to preserve the apple varieties!

Reply

Bart Hunter September 19, 2022 at 9:03 pm

I really like what you are doing. I always though it would be interesting to collect cuttings from road side apple trees. Plant them and see what happens. My thought is that if a tree can live and produce apples on the side of the road they must be pretty hardy. However, I don't have the land to start a project likes. Are you open to visitors? I was going see if I can find you. I don't have much experience with apples, but I did manage a successful vineyard in NH.

Reply