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Magali Duzant

in conversation

Magali Duzant is an artist and writer based in NY and Zürich. Her work investigates the poetics of perception and inquiry through installations, photographs, texts, and artist books. Publishing is a large part of her output, with projects ranging from newsprint zines to image-text publications that often revolve around themes related to the metaphysical, the natural world, and counterculture, viewed through a lens of humor, poetics, and romanticism.

Tree News invited Magali to discuss recent work, New York street trees, herbaria, and her forthcoming artist book, *A Tree Grows in Queens* published with Conveyor Editions.

Can you introduce your two projects, *A Tree Grows in Queens* and *The Dry Garden*?

A Tree Grows in Queens is an artist book that looks at the many ways that trees manifest into other things: myths and meeting points, memes, positions of luck. The book combines written text, my own photographs, and archival images to create a loosely connected narrative and deeper appreciation for the role that trees play in our personal lives and in a historical and environmental sense.

The Dry Garden came out of research I was doing for *A Tree Grows in Queens*. It is an installation and publication. *The Dry Garden* combines writings that consider the history of herbaria. A herbarium is a collection of dried plants that is used for scientific research purposes. As I was researching herbaria, I found interesting stories that I wanted to track more. It tumbled into a parallel research publication. The work discusses colonialism, taxonomy, and ecological catastrophe as a means of opening up an understanding of our own connection to plant life. Visually, the book is inspired by Anna Atkins, who was an early botanist and photographer and is credited with creating the first published book of photographs, *Photographs of British Algae: Cyanotype Impressions*.

My exhibition, *A Tree, A Garden*, at Antenna in New Orleans, was originally going to focus solely on *A Tree Grows in Queens*. I had proposed that the imagery from the book be hung in a collage style. I was interested in never showing a tree in a frontal manner, but rather gestures and suggestions of trees to create an environmental feeling of a forest and all the things it's made of. With the opportunity to make a second publication, *The Dry Garden*, I approached the show as two related halves.

A Tree, A Garden is an accumulation of many sparks of interest. The installation for *The Dry Garden* section was inspired by the Marianne North Gallery at The Royal Botanic Gardens at Kew in England. Marianne North was a botanical illustrator and a biologist that was famous for a very distinct, personal style of botanic illustration. It was important for her that she painted her subject matter in situ – so within the actual context of where these plants were growing. The gallery is hung salon style. You walk in and are surrounded by this plethora of plant material. The herbaria installation reimagines open source herbaria images. Some images are straight from the collection, others are collaged together, and some are zoomed in to focus on the handwriting or markings as the pages transitioned through different institutions. I thought the herbaria images could be a research corner paired with the more experiential and poetic section of the exhibition.



ABOVE Magali Duzant, *A Tree, Grows in Queens*, 2023. Image courtesy of the artist.

What was the impetus for the original project, *A Tree Grows in Queens?*

In 2019 I was commissioned to participate in an exhibition on stewardship at the Queens Museum Community Partnership Gallery. The curator sent me a link to the New York City STEW-MAP, a map that connects people to stewarding opportunities throughout the city. A lot of other cities have these maps too – there's one for Paris, there's one for San Juan, there's one in Seattle.

It's a lovely resource where you can find community gardens for example, or a climate education center in the New York Hall of Science that does workshops for local residents. There's a woman who teaches kids to swim as a means of stewardship so that they have a skill that's needed when you live on an island and a means to appreciate a different part of the environment they live in.

I proposed to make a free newsprint and digital publication called *Whole Queens Catalog*, referencing the *Whole Earth Catalog*. I love the *Whole Earth Catalog* tagline of access to tools. I was thinking about the NYC STEW-MAP being this ultimate tool.

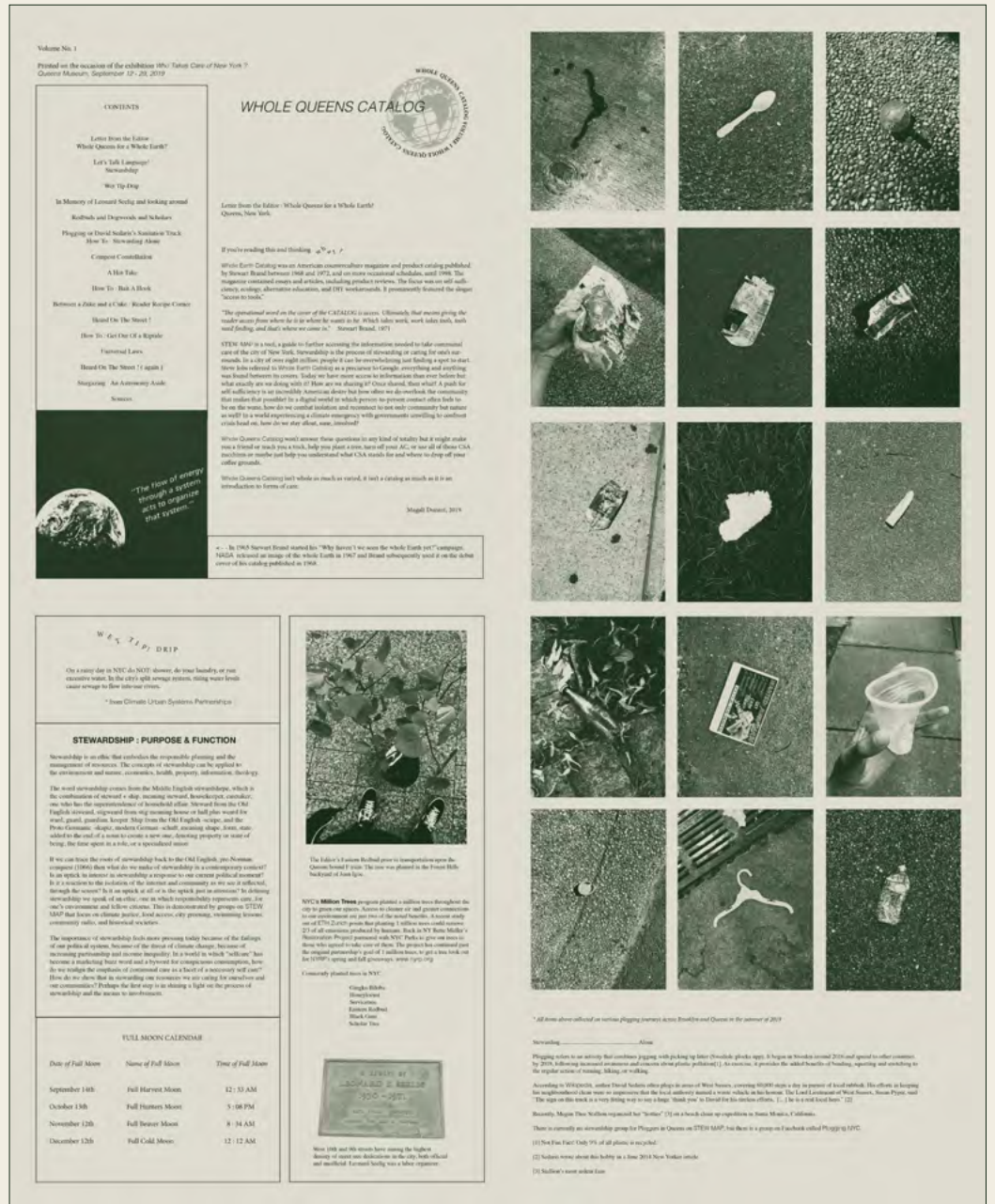
The operational word on the cover of the CATALOG is access. Ultimately, that means giving the reader access from where he is to where he wants to be. Which takes work, work takes tools, tools need finding, and that's where we come in.

Stewart Brand, 1971

My publication would enliven the map and bring some more narrative into it. I interviewed a lot of people, sourced recipes from CSAs, and the Bird Watching Society sent me their 10 commandments of bird watching. I went to pick up trash with the Littoral Society and then spoke to people who plog – a Swedish word for picking up litter while jogging. So I plogged for a while and documented what I collected. I also included the news story about how Megan Thee Stallion and her hotties went to clean up a beach in LA – so it was meant to be a fun collection of things that would give people an idea of what stewardship could entail.

During this project, I began talking to people who work as street tree stewards. The city teaches you how to prune, mulch, spot signs of tree rot, etc. I became really interested in street trees. As I began researching this, the city went into COVID lockdown. I ended up spending hours on the New York Public Library's online digital collections looking for tree images.

Then one day, my mother told me the story that became the first chapter of *A Tree Grows in Queens*. It focuses on a dogwood tree that my mother and aunts bought for my grandmother. They hid a dogwood sapling in the car, planted



ABOVE Magali Duzant, *Whole Queens Catalog*, excerpt, 2020. Image courtesy of the artist.

it, and surprised her on Mother's Day. Years later the tree had been dug up and everyone wondered where it went – trees don't walk away. It turned out that my grandfather had dug it up and replanted it in Forest Park, a large park in Queens with old growth forest.

There was something about this story and being in lockdown with a really early spring happening. The city was surreal, quiet and all of the trees were blooming already. I was going for walks with my father in Forest Park, and I told him the story. We decided we were going to look for this tree because it had pink flowers and most of the dogwoods in the park were white. This story says so much about my experience of my grandparents' relationship with each other, how it has reverberated, and this bizarre idea that my grandfather would dig up a tree and replant it in a public park.

That was the moment where everything switched on, where I wanted to write about street trees, but I also wanted to write about personal trees. I decided to find a tree and then a story that connected either to the location of New York or a specific issue that New York was dealing with.

At some point I found some "10 trees in New York" listicle and the oldest tree was in Queens. I visited with my mother, and found this newspaper article about a funeral that had been held for a tree¹. I thought it was funny that it was held by the New York City Parks Department, and they encouraged people to come and hug the dead tree. When I looked further into it, it's said to be the first weeping beech introduced to America, and all weeping beeches in the US can trace themselves back to this tree. Then I read a *New York Times Magazine* article in April 2020 about the American chestnut blight². It went in depth into how it started and all of the attempts to reverse it: through genetic engineering, and trying to crossbreed American chestnuts with Chinese chestnuts.

In many different cultural mythologies, trees are the start of the world, stand in for some human failing or a god teaching people a lesson. I thought this is a nice way to think about New York and larger issues through something that is highly relatable but also deserves more consideration. If you live in an urban area, it's easy to take trees for granted or forget that they are not just ornamentation or a pain. When I spoke to the parks department, they said one of the biggest issues they have is people cutting down city trees. People cut them down because they block a parking space, ruin reception, or get tangled in electric wires and people take it upon themselves to remove them. My goal was to share interesting, personal or relatable narratives to help discuss bigger issues, climate catastrophe for example.

Tell me more about the issues that New York is dealing with. I imagine some are shared with other places – like climate catastrophe. What are some of the specific themes and how do they connect to different trees?

The biggest one, as I mentioned, is climate catastrophe in its many manifestations. There's a chapter where I write about magnolia trees, the freak early spring of 2020, and how climate hardiness zones are shifting much faster than scientists thought. City foresters are having to project into the future more drastically in terms of what trees are planted because certain trees will likely not survive New York City temperatures. The city, for example, has stopped planting maple trees because a maple isn't going to grow to its full height within 50 years because it's getting too humid.

With the planet warming, we also have to talk about shade equity. It's great to plant trees – but where are we planting them and what else are we doing to neighborhoods that have been deprived of this really important, free access to shade and cooler temperatures? Shade cools neighborhoods and can help prevent early deaths. There was a study that states that older black New Yorkers are more than twice as likely to die in a heat wave than older white New Yorkers³. That has multiple causes: economic inequity, structural racism, access to healthcare, etc., but access to shade and cooling centers plays a large role as well. We need to think more about how cities can use trees as a resource not only to beautify spaces but to make them more livable.

There have been pledges to plant more shade trees in lower income neighborhoods. New York City has worked on various initiatives starting with the Million Tree Project a number of years ago – planting a million trees in five years. That has shifted to tree giveaways where New Yorkers can get a small tree if you have access to a space to plant it – often trees like dogwoods, red buds and cherries for private or public plots. It's meant to empower people to do this for themselves, their neighborhood, and to plant where they will be able to take care of the tree.

What are the central considerations when planting street trees in the city?

It's shade, it's lifespan, whether it's suited to the hardiness zone. There are also a lot of considerations around tree root growth. You can't plant trees that have lengthy, intrusive roots because of how much is below the sidewalk, but trees with smaller root plots can come down more easily. Sometimes it becomes a smaller tree that is more flexible in response to hurricane force winds. It's also about the span of branches in terms of where it's planted. Soil is another thing – these trees are not in the healthiest soil. They're probably growing in small tree plots with a lot of trash.

There's the green-washing side of tree planting too. When companies and charities say “we plant one tree for every pair of shoes you buy” or whatever, sometimes the promises to plant trees are actually trees that are meant to be logged later, or aren't native and can suppress biodiversity within fragile spaces, or a lot of trees get planted but there's no maintenance happening.

It's important to question this idea of the magic fix. First of all, what tree are you going to plant and is it going to live for another hundred years? Is it a tree that's going to actually provide any shade or is it mainly decorative? Obviously, the easy fix is what people always seem to focus on.

One chapter in the book contrasts ginkgo trees with zombie forms of capitalism⁴ through the story of a building on Fifth Avenue that was originally a huge department store, Lord & Taylor. One could say department stores were the original shopping mall, which was the original Amazon marketplace. Lord & Taylor sold to WeWork, and we know what happened to WeWork... it declared bankruptcy and the building was sold to Amazon. I was interested in how all the while these ginkgo trees witnessed everything from the sidewalk. I was thinking of the ginkgo as a fossil tree and misunderstood or wrongfully-maligned tree. Ginkgos can live over a thousand years. They're one of the earliest tree species that can be traced back to ancient times, they grow in almost any soil, and deal really well with pollution. However, there is also a stereotype that they reek. When the fruit is dropped it has this famously vile smell. For me, it was funny that people are disgusted by a tree with smelly fruit but we're standing in the middle of the city that reeks on its own from so many other things.

One of my favorite trees that I came across through the New York Public Libraries Digital Collections was the Harlem Wishing Tree. It was a tree that musicians in Harlem would rub for good luck before they would perform. It was cut down for some building project and Bill Robinson planted a new tree and saved the stump. An original piece of the stump now lives at the Apollo Theater. I wrote about touching through the lens of the pandemic – all of these things that we touch for luck and this idea of sympathetic magic or transferring some kind of energy from one object to another. I was also thinking about tree hugging as a means of protest. Now, “tree-hugging” has such an eye-rolly, “hippie-dippie” association. However, the term and practice dates back to India in the 1700s when a village sacrificed itself to save its trees. In Northern India in the 1970s activists started hugging trees again to prevent them from being cut down. From there it spread across the world. I liked this idea of touching a tree to save

it or to protect it in comparison with touching a tree to take something from it or gain its energy or power.

The tree in front of its plaque may no longer be there, or Lord & Taylor's in its somewhat fusty mid century glory, but I find comfort in the notion that perhaps those trees that survived were female; greeting their new Amazon neighbors with a show of color and a rancid, butyric acid tinged hello.

Magali Duzant, A Tree Grows in Queens, 2023

A Tree Grows in Queens started with the Whole Queens Catalog, NYC STEW-MAP and supporting stewardship opportunities and resources. How does A Tree Grows in Queens relate to this focus? What has your process revealed or how has it expanded on that initial project?

As I was working on this, I kept thinking to myself that I hope by reading these interesting, funny, or odd stories that people would – I mean this sounds very Pollyanna – but they would think a little differently about trees, be more interested in their possibilities, or a little more invested in the decisions of people involved in these issues. While I was working on this, I was listening to an interview with a climate scientist who was saying that more personal narratives were shown to be successful in opening the door to climate action or climate thought. That brought me back to conversations with the climate education folks with the *Whole Queens Catalog* – if you can tell this fact in a way that isn't just numbers maybe people will give it a second thought. I think it worked on me that way. I would have considered myself to be interested in the environment, plants, and the outdoors. However, I could never have named a tree beyond that's an oak, that's a maple. As I worked on the project, I became more interested in the diversity of trees that exist in the city – where they come from or why they're here. It made me more conscious of my surroundings. It was like getting past some form of plant blindness. That has been almost a form of stewardship in the sense of opening my eyes.

The imagery in these projects include your photographs and found or collaged images. What is your process for making photographs? And how do you conceptualize it or play through it? What is the back and forth between the text and the images?

It's funny because you were talking earlier about *Tree News* and how you use and make images, but are not sure how to conceptualize yourself as a “photographer” in relation to the other artwork you make. I studied photography, I got my graduate degree in photography, and I think I made like two

NEW 'WISHING TREE' STOPS HARLEM RAIN

Substitute for Old Elm Shows
Its Power at Once—5,000
at Rhythmic Planting.

Bill Robinson, 'Mayor,' Conducts
Colorful Ceremony—LaGuardia
and Moses Attend.

Harlem's new "wishing tree," larger than a sapling (the Park Department is doing its best to make amends) but bare of leaves, thinly branched, and wrapped as tightly as a mummy in burlap bandages, has already begun to carry on. It began yesterday afternoon.

"We rubbed that tree and it stopped raining," announced Bill Robinson, "Mayor" of Harlem and tap dancer, into a double row of microphones. The announcement was made just before the new tree was officially "planted" by rhythmic shovelers at 131st Street and Seventh Avenue, near the spot where the old "wishing elm" stood for so many years (some say thirty-five, some say longer) before the Park Department undertook to widen the avenue.

"The tree is dead; long live the tree," said Bill Robinson in effect. And his attitude is Harlem's attitude. He was cheered to the echo. Meanwhile, the spot where the old tree had stood, in front of the Lafayette Theatre at 132d Street, remained unhonored and apparently unwept. Bill Robinson turned and smiled at Mayor LaGuardia and at Park Commissioner Robert Moses, who were there to speak at the dedication. Harlem, so recently bereaved by the city, was pacified.

Ceremony Is Syncopated.

In the syncopated ceremony which followed, devout spirituals were interlarded with "selections" by the "Monarch Elks Band" and a ballet by "hi-de-hi" dancers from neighboring theatres and night clubs who "went to town," as Mr. Robinson expressed it, on the splashy pavements. Semi-rectangular grand stands nearly two blocks long and hundreds of chairs provided by the Park Department were not enough for the crowd of 5,000; spectators lined the curbs, held back by an "Inspector" detail of eighty policemen, while clusters of faces peered down from windows and roof-tops.

Not entirely forgotten, the old tree has had its stump resurrected, polished within an inch of its life, and imbedded in concrete on the traffic "island" before the new one, on the theory that it will somehow communicate its mysterious virtues to its successor. It is estimated that 20,000 persons have made wishes under the old tree, some of which came true.

In front of the sibilant stump, also imbedded in the concrete, is a bronze plate bearing the inscriptions:

"You asked for a tree of hope, so here 'tis. Bill Robinson."

"Swing your shovels high! Swing your shovels low! Gonna plant this tree 'fore the sun goes down," sang the shovelers, digging away into the neat hole prepared for them by the Park Department. The shovelers were silvered, with red handles. One of the shovelers was Bill Robinson, resplendent in top hat, frock coat and gold Police Department badge.

The Mayor Is Presented.

Introduced by Mr. Robinson as "Our Honor the Mayor of New York," Mr. La Guardia received an ovation.

"This is the way to plant a tree!" he exclaimed. "Commissioner Moses—the greatest tree planter in New York—tells me that he has 800 more trees to plant, and we're going to have Bill Robinson do a tap at every planting."

The "planting" was broadcast over Station WNYC with Mr. Robinson as master of ceremonies. It was he also who led the parade to 150th Street, where the Bill Robinson Playground (so named by the Mayor) was to be dedicated. Though diminished in pace, the dedication was as much Robinson as the planting had been. The new playground, lent by the Rockefellers at Bill Robinson's request, is just across from Mr. Robinson's apartment in the Paul Laurence Dunbar Building.

Street Scenes—Manhattan: Wishing Tree



FLUSHING

Old Tree May Be Benched



Richard Lee for The New York Times

The mother of North America's weeping beeches lived for 151 years.

What do you when a 151-year-old landmark dies?

When it's one of only two so-called living landmarks in New York City and is considered the mother of all weeping beeches in North America, you don't simply cart it off to the sawmill. Henry J. Stern, the city's Parks Commissioner, held a funeral for the hallowed tree last month and is now considering how best to honor its woody remains.

From a four-inch cutting brought from Belgium in 1847 and planted in the Flushing nursery of Samuel Bowne Parsons, a horticulturist, the tree grew to 60 feet, with a girth of 14 feet and an 85-foot-wide umbrella of spindly branches. The other living landmark is a magnolia grandiflora, planted in 1885, in Bedford-Stuyvesant, Brooklyn.

Mr. Stern said the weeping beech had been in decline for 30 years. Tree doctors, who kept it on life support with fertilizer injections and cables, pronounced it dead last fall.

As a memorial, Mr. Stern said a 10-foot shaft of the trunk would remain in the backyard of the Kingsland Homestead, a historic house on 37th Avenue between Parsons Boulevard and Bowne Street. As for what happens to the rest of the tree, that depends on how rotten its core is, which foresters will not know until it is felled later this month.

One option is to plane its hardwood into park benches. Another of Flushing's famous trees, a 200-year-old cedar of Lebanon that survived de-

velopers but not nature. Killed by a lightning bolt in 1934, the tree was hewed 12 years later into "fireplace seats" and "memorial logs," according to a 1946 article in The Long Island Star Journal.

Mr. Stern, his tongue firmly in cheek, said another idea for the weeping beech would be to dice it into millions of souvenir toothpicks. "Everyone in New York City could have a piece of the weeping beech," he said. "But that is not a very dignified end for this great tree."

But he does envision people buying slices of its thicker limbs to decorate their mantels. Proceeds from the sale, he said, would go toward caring for "the sons of the weeping beech," eight offshoots that sprouted 40 years ago and have protected status. Socrates Sculpture Park in Long Island City could also inherit some gnarled beechwood, Mr. Stern said. It already displays a sculpture with a chunk of a blue atlas cedar given to the city in 1964 by the Emperor of Japan. It died 30 years later after being moved to make way for the new tennis stadium at Flushing Meadows Corona Park.

What about a Weeping Beech Memorial Pencil? "Not a bad idea," said Scott Heyl, executive director of the city's Historic House Trust, which maintains the Kingsland Homestead. Mr. Heyl said the trust was open to suggestions from the public, with one caveat. "We don't want it to be tacky," he said.

RICHARD WEIR



FLORA OF Cultivation

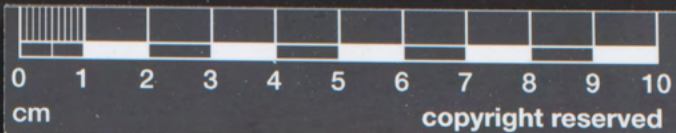
Ginkgo biloba L.

Morris Arboretum, Phila.

Coll., J. E. Jennings, Jun

HERBARIUM, CARNEGIE MUSEUM, PITTSB



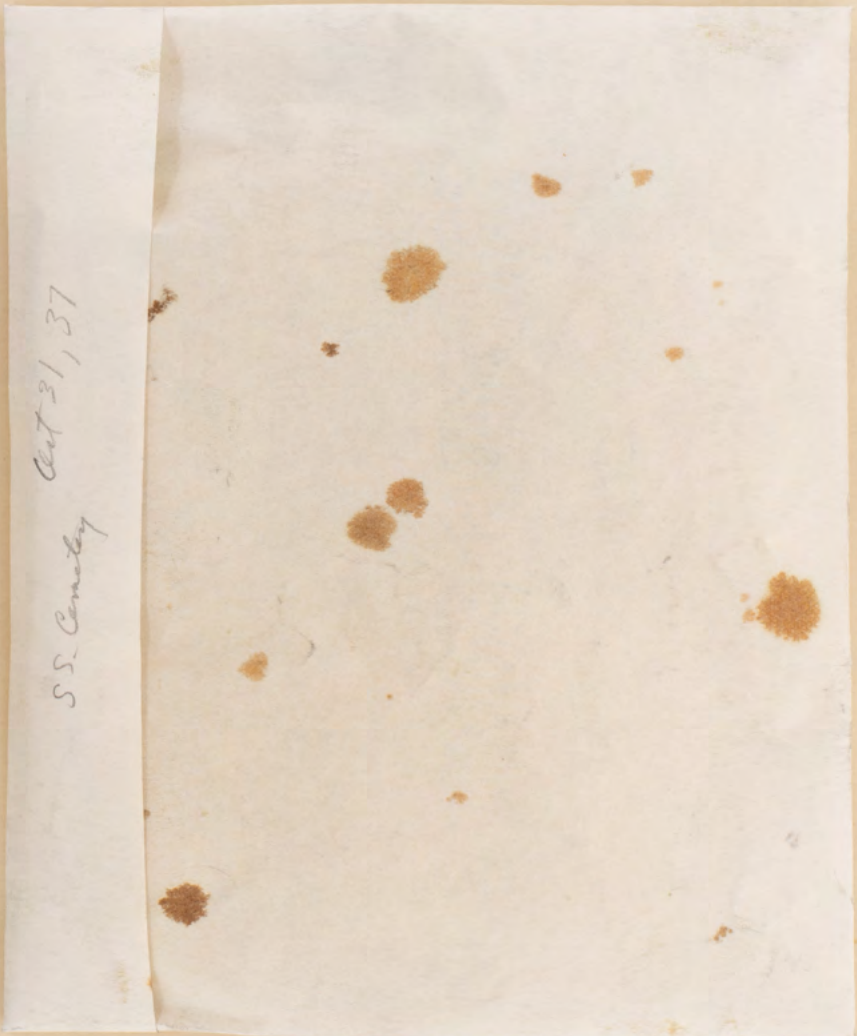


CARNEGIE MUSEUM
HERBARIUM (CM)
PITTSBURGH, PA.

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CARNEGIE MUSEUM
HERBARIUM (CM)
PITTSBURGH, PA

Oct 31, 1937
South Side Cemetery along
Brownsville Road
Herbert Hodgson



Oct 31, 37
S.S. Cemetery

Acc. No. 11,492

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FLORA OF *Cultivation*

Senecio biloba
South Side Cemetery, along Brown-
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Coll., Herbert Hodgson Oct 31, 1937

HERBARIUM, CARNEGIE MUSEUM, PITTSBURGH, PA.

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photographs in graduate school. I have times where I don't feel confident as a photographer, and then I have moments where I think, "I know how to make a photo." I was in a photo bookstore with my partner the other day. We had looked through some books, and I turned and was just like, "Why do I doubt myself? People are taking photos of paper cups. I'm a photographer."

All that to say, when I came up with this project I thought, "Oh my God, am I going to go photograph trees?" Which sounds ridiculous, but as someone who kind of balks at the thought of being a photographer, I thought, "I can't go photograph trees". I felt that I had to be a total gearhead to photograph a tree, or I had to come up with something that just instantly brought me to freshman year photo 101.

I started to find images in archives and was thinking that I would write and only use archival images. But that didn't feel right. I finally sat myself down and decided I needed to create a rule of how I photograph. Instead of individual trees, it would be a forest of images: impressions and different aspects in the same way the writing considers different themes and expands outward. I told myself that the only photographs I would make for the book would be suggestions of trees or a gesture of a tree. I went out and photographed shadows and bark and felt very self-conscious at first. As I started to do it more, I realized it was good because the text is quite descriptive so the images can be more suggestive.

Afterward I returned to the archives and looked for images to pair with mine. I knew I wanted the photograph of the women rubbing the Harlem Wishing Tree stump. There's a chapter about migration where I write about palm trees and orange trees at the World's Fair in Queens. The Florida pavilion moved something like 6,000 palm and orange trees to Queens and planted them throughout Flushing Meadow Park for their pavilion. There are wonderful photos of people planting them and women in bathing suits leaning against them very uncomfortably. I wanted to reference the descriptive nature of the text and the stories being told by using more straightforward archival images. My images give more of that background character, but it's still a large amount of varied imagery.

For the installation at Antenna, you mentioned one component was creating an experiential environment while the other was installed to point to research or a collection. *The Dry Garden* is interesting because its about botanical research but also the non-objectivity of the endeavor of herbaria, taxonomy, or collecting. The text reveals associated problems, complications, and the flawed hands of the people engaged in the endeavor. I'd love to hear more about those moments. What did you learn about herbaria and their history?

A herbarium is a collection of dried plants used for scientific purposes. They've been around for a few hundred years. They technically stem from early herbals, which were used as medicinal books. There are historic herbals throughout the world: Egypt, India, there's an early Aztec one that was translated into Latin, for example. There's a very famous one from China that much of Chinese herbal medicine can be traced back to. Universities in the 1500s started botanical gardens and then herbaria to further their research. Herbarium is a Latin translation of dry or dead garden. When a plant was still in its full form, you could pick and dry it to compare to other plants to get some overview or detailed identification.

There became an emphasis on collecting and getting samples from other places to broaden your study. Having botanical gardens and collections was both a form of wealth and study in Western Europe. There was obviously exploitation: collecting plants from afar to demonstrate how powerful your empire or government was. It was also used as a means to find new products to trade or exploit in other ways. Universities and governments themselves had these

collections and started trading the collections and studying them. I knew this practice was tied up in colonialism, but then I began to realize that this practice is also the introduction of so many things that we take for granted in our daily lives: medicines, food and drink items, etc. It's the co-opting of local knowledge being reused in different contexts. I was interested to know more about the contemporary use of herbaria.

While I was working on *A Tree Grows in Queens*, I had been writing about crape myrtles in the chapter about climate change. Crape myrtles are native to Southeast Asia and parts of the Pacific, but they grow really well in the southern United States. They are now being planted more and more in the northern United States because of climate change. I looked it up on the Smithsonian Institute's digital herbarium, and there was a crape myrtle from Haiti. I realized that you can track plant migration through herbarium specimens – just pieces of archival board and plant material.

A recent paper by a diverse group of authors entitled "The colonial legacy of herbaria"⁵, describes the deep disparity between, "where plant diversity naturally exists and where it is artificially housed and cataloged. This renders much of the world reliant on botanical knowledge and resources housed outside of their own borders."

Magali Duzant, A Tree Grows in Queens, 2023

I went on a tour of the entomology collection at the University of Zurich. The curator showed us the herbarium of a bug collector. He collected a very tiny type of moth and the plants that the moths would lay their eggs on. The curator talked about how they were able to figure out all of these things about the reproductive cycle of these microscopic bugs through these herbarium pages. The herbarium is this very old school scientific material that is incredibly useful in terms of tracking plant migration, climate change and its effects. But with that you also can track cultural and economic systems like colonialism and plant trafficking. To me, there's something so fascinating about this incredibly low tech version of scientific information that is still in use today. You can see how names of plants have changed depending on what you're looking at and where someone has decided to include an indigenous name of a plant. People are also looking at where they are kept and how they're accessed. There's a huge push to digitize them. You can't undo the taking of plants or taking of knowledge, but you can at least make it open and accessible and easy to get to as a first step.

I ended up seeing pressing concerns in these incredibly old but also beautiful materials. Histories get layered into the objects. You can see the individuals when you start to look and see the people involved. For example, there was a German plant collector who fell in love with the flora of Alabama and that became his life's work. Today, there are contemporary versions of herbaria on the west coast where indigenous groups are making herbaria specifically to keep indigenous knowledge accessible to members of the community.

You find the marks of different individuals. It's not just scientific information in the way that a chart would be; you can get a sense of who some of these people were, the ways in which people have accessed it, notes people have made, or what they choose to include. The chestnut specimens were really enlightening to me. If you look for chestnut samples in an herbarium in the US, it's often accompanied with a letter from the collector or from someone that reviewed the material asking if it has blight or not. Can you diagnose this? What should I do? These moments really put the human quality of these collections into a new light.

Your writing beautifully considers this process of naming plants in the history of botany. Can you speak to this a bit?

I was interested in naming systems for a few reasons. On one hand I am learning German, and one of the things I really enjoy is learning plant names: Peony is Pfingstrose, Chestnut is Kastanienbaum. On the other hand, naming is a system of organization and control, something necessary and complicated, that hints at larger issues. A few years ago I read a book, *The Brother Gardeners: Botany, Empire and the Birth of an Obsession*⁶, and was struck by the personality of Carl Linnaeus, who is credited as being the person to solidify binomial nomenclature. Before this two part naming device, Europeans often named plants descriptively. Over time you would have these plant names that read like a sentence. At some point the common named white pine was “the American pine consisting of a single follicle of long, thin tricot bristles, each corner of which is roughened with very fine bristles along the entire length (translated from Latin).” Today we know the tree by the scientific name *Pinus strobus*. The Haudenosaunee call it the Tree of Peace as it was used as a symbol of the creation of the Five Nations Confederacy. In that one example you have incredibly different approaches – symbolic, historical, cultural, scientific. Naming can point to differing perspectives, can denote who held power, what was valued etc.

That history was fascinating to me and then of course Linnaeus himself was an interesting person: incredibly intelligent, passionate, but horribly vain. I loved digging deeper and finding how he almost weaponized names by insult-naming plants. He christened a weed, *Siegesbeckia*, for a German scientist he thought a prude or *Dorstenia*, a relative of the mulberry, “whose flowers are not showy, as though they were faded and past their prime which recalls the work of (Theodor) Dorsten.” I find these human histories to be interesting but also important to remind us that those in power are not and were not infallible – they were people.

Prior to this plants were classified based upon appearance, use, or whether or not they were edible. He [Linnaeus] decided upon an empirical method of identification which would simplify classification and allow ever more people to learn how to identify plants. With basic familiarity one could get the hang of his system. And yet there was a huge amount of pushback against it. Many botanists revealed themselves to be prudes, calling Linnaeus lewd and his observations “too smutty.” One of the most scandalized was the German botanist Johann Georg Siegesbeck who called the system “loathsome harlotry.”

Magali Duzant, The Dry Garden, 2023

You mentioned the topic of decolonial approaches. Can you speak more to what you learned about attempts to reckon with this history?

In some places there has been an attempt to return things. However, they’re asking where do we return it and is there an institution that can house it?

The question I found interesting was how do you decolonize something that is so firmly implanted and existing in the history of colonialism. I was reading articles and watching videos from the institutions themselves, and it’s this funny thing because it’s the term museums are using, but how do you decolonize colonization itself?

So what I found what was effective or interesting has been like the Klamath community that has been working with UC Berkeley to create their own updated herbarium collections. They’re making herbarium pages and labeling them with Klamath language names for everything and connecting them to stories and uses within the community. So they’re saying, “okay, herbaria exist and it might be rooted in this thing, but we can use it for our own good as a means of sovereignty and keeping knowledge alive and in use.”

The other big thing is digitizing these collections. It’s an incredibly expensive and slow process, but it’s getting more funding to make them accessible to the public. You don’t need to go there in person, you don’t need clearance, and you don’t need to be a practicing scientist or scholar. You can just be a person who is interested, which sounds simple, but often with institutional information it is actually really difficult or requires some academic affiliation to access. Then related to naming conventions, people are reconsidering how the plants are categorized, how things are named, how things are presented as terms of who collected it and what did they choose to remark upon? Did they take detailed notes about the use of the plant? About the context of the plant? So I guess it’s trying to acknowledge the unfortunate and violent past of many of these collections while also finding a way to bring them into the future in the best way possible.

Can you share more about the imagery of *The Dry Garden*?

I loved the scientific display of imagery in herbaria. While the images all vary, there is a general consensus of how you collect a plant, what you show, and what you include. It’s on an A3 board with a color chart. I loved the uniformity of that. The more I looked, I was excited about the impressions of the collectors. For example, their handwriting, the impression made by a seed that fell off at some point, or the way that you could see where the specimen had been retaped. I liked the human mark-making upon this scientific ground and comparing the rigidity and structure with the graceful plants. I wanted to highlight these details.

While I was working on this, I was in my head because all of my work was on a computer. So I made some very bad cyanotypes on my balcony to do something tactile – I collected leaves and made cyanotypes but they weren’t anything. I was looking at a stack of herbarium pages I printed, and wondered if those could be cyanotypes. Then it clicked – that’s what Anna Atkins book of photographs was: a form of an herbarium page. It was a plant specimen with a name.

I had worked with cyanotypes before and felt comfortable with them, but as I was learning more about their history I started to put together the natural and scientific aspects to these images. Cyanotypes were used for blueprints, and in the case of Atkins, they became a kind of blueprint for reading information. I also enjoy that cyanotypes require the sun, being outside and are a one-to-one reproduction of something. It was also a nice contrast to *A Tree Grows in Queens* where the imagery was really diverse and a lot to take in. When you think of flora in general, blue is the last color that you think of because it doesn’t fully exist in nature the way green, red, or yellow do in terms of plant life. I liked the idea of using two colors [blue and white] that were related to the history of botany and photography itself.

The Dry Garden is available for purchase from Antenna Press. The publication *A Tree Grows in Queens* from *Conveyor Editions* is forthcoming

Telephone: 521 Sta.-Sta.
TWX Watkins Glen NY 196

Estab. 1916

JDD

J. S. NEILL CO.

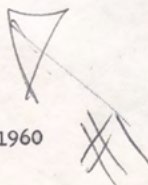
UNIFORM QUALITY

CC GC
CC Ed Van Dyne
CC Conserv. Albany
(Spence Duncan)
CC Wm Knapp, PRR, Sodus Pt



FRUITS AND VEGETABLES
WATKINS GLEN, NEW YORK

Oct. 1, 1960



Mr. J.D. Diller, Pathologist
U.S. Dept of Agriculture,
Forest Service
NORTHEASTERN FOREST EXPERIMENT STA
RFD 2, Box 283
Laurel, Md.

Dear Sir,-

At long last, I enclosed 2/3 pressed leaves from the Chestnut Tree at Sodus Point, - William Knapp, c/o PRR that place, brought them here. I have also branches so you could examine wood if you wanted to.

The leaves marked No. 1 have card attached reading "OLD NATIVE CHESTNUT TREE, only living one in country known to white man, or otherwise".

This #1 sample is from tree by PRR sta. Sodus Point, about 30'. Mr. Knapp got nuts from it last year. He is going to get nuts this Fall and send to me.

I also enclose samples from Chinese Chestnut Tree marked #2, also on a nabor's place at Sodus Point.

I wish you would do something about preserving this tree. The NY State Conservation Dept. was inquiring about Chestnut Trees sometime since and I believe I wrote them but heard nothing. They have other fish to fry apparently. But, Ed Van Dyne of Troy, Pa. sez you are "Mr. Chestnut" himself, and I leave it in your hands.

Sincerely,
J.S. NEILL CO.

If you dont want the nuts hes going to send me, I'm going plant 'em myself. I should live so long to see the fruit

Castanea dentata Robt.

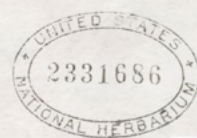
*Wayne Co. Pa.
Castanea mollissima Bl.*

Jack Reed

Chinese



Buss in box



PLANTS OF NEW YORK

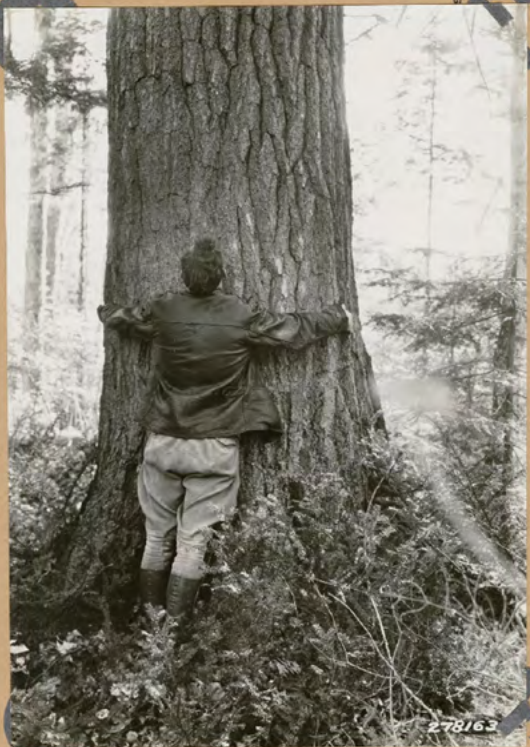
*Castanea mollissima Bl
Sodus Point, Wayne Co.*

J.S. Neill Co.

Oct. 1, 1960



OFFICIAL BUSINESS



278166 - Old growth white pine in mixed hardwood stand, Upper Michigan Branch of Lake States For. Exp. Sta., near Duques, Marquette County, Wooley standing by tree.
278164 - Old growth white pine in mixed hardwood stand, Duques, Michigan. 5/20/53

278163

REPRODUCTION OF THIS PHOTOGRAPH BY ANY OTHER PERSON WITHOUT THE WRITTEN PERMISSION OF THE FOREST SERVICE IS PROHIBITED.

Mason Heberling

in conversation

Mason Heberling is the Associate Curator in the Section of Botany at Carnegie Museum of Natural History. Heberling received his Ph.D. from Syracuse University in Biology in 2015.

Heberling is a plant ecologist and botanist whose research explores plant functional strategies in deciduous forest understories, especially in the context of environmental change. Heberling is particularly interested in innovative uses for natural history collections and rethinking how we collect.

Mason: Herbarium is just a nice word for a collection of plant museum specimens. Most of them take the form of dried plant material pressed between pieces of cardboard, often in newspaper, and dried either in an oven, by air, or by the fire in the old days and then mounted to paper. Today we use more archival paper and mounted with string or glue. The Carnegie Museum Herbarium is one of almost 4,000 herbaria across the world. It's a global scientific practice that started many hundreds of years ago. The earliest herbarium specimens that are still in existence date to the 16th century. Herbarium specimens mostly reside in Europe, although they exist in other places too. The Carnegie Museum Herbarium is part of that long tradition and was founded in 1895, but we have specimens from the Pittsburgh region before then. The Botanical Society of Western Pennsylvania gifted their herbarium that became the museum herbarium. The society is still active and is one of the oldest, longest running botanical clubs in North America.

At that time, many herbaria were built with the idea of getting as many representatives of different plants from all across the world. That practice has changed for a variety of reasons both financially and ethically. Another common way of growing or diversifying the collection is trading specimens with other institutions. We have a lot of specimens from herbaria from all over the world. Our collection today has about 550,000 plant specimens – almost entirely in the dried form. We have a smaller number preserved in alcohol to maintain their 3D structure. About a third of our collection is from Pennsylvania, a third is from elsewhere in North America, and the remaining third are from all over the world. We're a big collection, but by no means the largest. We're the second largest in Pennsylvania; the Philadelphia Herbarium is over twice our size for example.

We have some unique historical and perhaps unexpected specimens here in Pittsburgh. Every specimen has an interesting scientific and cultural story. The herbarium has a lot of local collections. We're the largest collection for the upper Ohio River basin. Different herbaria specialize in different things, and a lot of that depends on the people that worked there and some serendipity. One of the early directors of the museum, William Holland for example, was born in Jamaica. His grandfather was a Moravian missionary. He was also a botanist of sorts and collected quite a bit. You wouldn't expect to come to Pittsburgh to find specimens collected from Jamaica in 1840, but we have them.

I'm currently working on a project with a student on one of our historical collections gathered by Michel Adanson. Adanson was a contemporary of Carl Linnaeus and was also developing a similar taxonomic structure. We have about 24 specimens, which might not seem like a lot, but it's quite unique, that Adanson collected before, during, and after the French Revolution from 1750 to 1800 throughout his life. They are specimens that he called "monstruosités", what we'd call a rare trait variation: a four-leaf clover, for example, or specimens that have double flowers that typically don't. He collected these specimens throughout his life and they ended up in Pittsburgh mostly because of the city's industrialists. Pittsburgh has a very high ratio of cultural and scientific resources

per capita for a medium-sized city, as a result of the booming industry that was here 100 years ago and the money that still exists here – and that's the case for the Adanson Collection. It was at the Hunt Institute of Botanical Documentation at Carnegie Mellon University before it was transferred to the museum.

There's a developing field of plant humanities that oftentimes includes herbarium specimens to look at relationships between plants and people through history. Increasingly, these collections are being digitized and made available online. The Carnegie Museum has all its specimens from Pennsylvania and the Mid-Atlantic region online with high resolution images. They are publicly available for whatever use – so that has created more opportunities for researchers.

What are the financial and ethical concerns that have changed the collecting process?

Natural history museum collections in the Western sense emerged from the idea of cabinets of curiosity or the intrigue in the "exotic", a very exploration-driven enterprise. During the Renaissance there became a stronger scientific basis for a lot of these activities, not that there wasn't before. At that point herbarium specimens were used to document what plants live where and by extension why – to look at the diversity of life. The foundations of modern herbaria are mostly taxonomic based: naming organisms, organizing their evolutionary relationships, and describing and naming species new to science. That's the traditional uses of herbarium specimens and natural history museums.

Financially, large scale expeditions don't happen as much as they did. Ethically, in terms of my research, the focus has shifted to using existing collections. We do grow our collection internationally, but our main focus is to grow the regional collection intentionally. There are a lot of challenges to collecting internationally, for a variety of reasons, but including the increasing realization that a lot of the collections are problematic. Many collections were made in a colonialist way: going into a place, taking a bunch of stuff, and bringing it back.

Today, there are more legal restrictions and obligations, and rightly so, that need to be met including having partnerships with local communities. One hundred years ago, there was less of a moral compass on collecting. The Carnegie Museum Herbarium, although we are global, didn't do much global exploration in the same sense of the large European collections that were doing it alongside their colonial enterprise.

We're an actively growing collection, but no botanical researcher at our museum does international collecting. We're small – just me and a collections manager, Bonnie Isaac. She does a lot of collecting within the country.

The actual method of collecting hasn't much. The only real change is that now we have the exact GPS coordinates. Taxonomy is still the bread and butter of the collection: naming, describing and organizing the tree of life, but specimen uses have diversified. Increasingly, largely in the last 10 years, museums and herbaria have shifted away from documenting biodiversity to also explore and document biodiversity change. I'm an ecologist, not a taxonomist. Most of my projects are related to the impacts of climate change and introduced species on other plants and ecosystems. We're now realizing that while herbaria weren't initially collected for this reason, they're really useful for looking at environmental change. We have snapshots of what plants grew where, at what time, and we can track how they've changed through time. A lot of our projects are looking at plant phenology, or the timing of certain biological events. We can look at the impact of warmer springs on plant flowering times, for example.

Collecting is not a dated practice, but it has been perceived that way. Studies have shown that local collecting has decreased. There's a paper about the decline of collecting that was written

pre-digitization. They did a sub-sampling of specific species and found convincingly and rather alarmingly that local collecting has been on the decline in the last couple of decades. I'm not a historian of science but there has been a shift from botany proper and natural history to more focus on DNA, integrative and molecular biology approaches throughout the 1900s to today.

Bonnie has a project focused on rare plants of Pennsylvania. She's using the herbarium's existing records and going back to those localities to see if she finds that plant again. She will collect the plant to document that it's still there and collect generally so we have an understanding of what's growing when and where.

Our environment is changing, and we're not capturing it in our collections the way we should be. We need to be growing the collection such that researchers in twenty years can look at this change through time and act on it.

Since you're using specimens for a different use than their intended one, what information is missing or what things weren't considered at the time?

There are standards in what makes it on the label. However, there's a lot of leeway. Who, what, when, where is on the label. The identity of the specimen doesn't matter as much because that can change through time: an expert might come in and name it as something else. That's the importance of having the physical plant – it could have been misidentified, or it's more likely that one species might become two. Herbaria as they were originally collected are still a powerful resource, but because it wasn't designed for looking at environmental change, there are a lot of biases in the collection: some species and places may be oversampled, others under sampled.

Gathering molecular data is another increased use. People take little pieces of leaves and get DNA. A big part of my current role is thinking about this next wave of specimen use and how we can curate and collect specimens to support that. It's definitely not resolved. One strategy is thinking about a long-term collecting plan. We have about 30 sites across Western Pennsylvania that we intend on visiting once every 10 years. That way, we'll grow the collection ad hoc if there's a new plant and continue to collect specifically to get a series over time.

We're connecting iNaturalist to our field observations so the community can identify and comment on the iNaturalist record. Color, shape, or what the plant was growing with aren't always preserved well in herbarium specimens. Now, we can get DNA from a specimen and other details and context from the photo.

What are the herbarium's current challenges and opportunities?

Both a challenge and an opportunity, I guess, is perpetually advocating for the collection. Why this is important and not

a dated practice. There is a general perception that collecting herbarium specimens is a Victorian era practice that no longer has real scientific merit, but it does. There's always the financial challenge of maintaining and growing the collection alongside doing research.

In terms of opportunities, there's a lot of happening right now and a growing recognition of the many uses of the collection. This can include artists or historians, for instance, or by ecologists who normally would never use a herbarium specimen or set foot in a museum. We have a real diversity of scientific users of the herbarium now.

We don't actually know what a lot of the future uses of our specimens will be. We know current research but don't know how the specimens will be used 10 years down the road. We're attempting to grow the collection in a way that tries to future-proof it to maximize its current and future use.



ABOVE : *Alliaria petiolata* or garlic mustard, collected by L.K. Henry, 0.5 mi N of Raymlton Venango County, PA, 14 May 1959. Image courtesy of the Carnegie Museum of Natural History Herbarium.

How did you get introduced to herbaria collections?

I had my PhD in plant ecology, and I'd never been in an herbarium before. I was doing a postdoc focused on garlic mustard in the woods on Trillium Trail in Fox Chapel. I received a postdoc Fellowship with the National Science Foundation that required fellows to use herbarium specimens. I remembered an interesting study that looked at trait changes in invasive plants using the herbarium record. There's a garlic mustard specimen collected from Trillium Trail in the 1950s from a former curator. It documents the first time garlic mustard was collected from that location and one of the earliest for Allegheny County. This specimen is kind of crappy looking. I have this story in my mind – I don't know if it's true – that the curator was on Trillium Trail, didn't collect anything else that day, but

saw this and was like, "what the hell is this?" He then put it in his pocket, brought it back, and pressed it.

This is a century's long practice – all the rare book librarians know about taking a piece of a plant and putting it in your book so you can look at it later. That's something that still happens. Oftentimes the first records or new records are ones that you stumble upon. In Bonnie's case, some of her most interesting finds are from stumbling upon a species that she didn't mean to, including finding plants that haven't been seen in the state of Pennsylvania for a hundred years.

I'm very interested in this next generation of herbarium, the increased appreciation, and making the collection available and usable to other researchers, but I also do my own research. I'm one foot in both doors.

On the research side, I'm working on a few projects looking at trait changes through time in native and introduced plants. I'm working with a student to develop a new way of collecting that would document morphological diversity within a species. We're currently looking at knotweed as a case study, which has a lot of morphological diversity. In Pittsburgh we have giant knotweed, Japanese knotweed, and they hybridized – their hybrid has a lot of different leaf shapes to it.

Another project is looking at changes in the pores on poison ivy leaves over time. We're able to look at herbarium specimens and see how poison ivy and other ecologically similar species are responding to increased carbon dioxide in air. We found, unsurprisingly, the number of stomata on their leaves are decreasing as carbon dioxide increases. What's interesting is not all species are doing that.

There's so much knowledge here to be untapped both scientifically and culturally. Looking at that garlic mustard specimen really resonated with me in terms of following in the footsteps of other scientists and of that individual species. I think the historical element is exciting in that we are capturing these snapshots of the past and able to study them with an eye towards the future.



ABOVE: *Alliaria petiolata* or garlic mustard, collected by L.K. Henry along Trillium Trail, Fox Chapel, Allegheny County, PA, 8 May 1956. Image courtesy of the Carnegie Museum of Natural History Herbarium.



ABOVE: *Alliaria petiolata* or garlic mustard, collected by L.K. Henry at Sugar Creek crossing on Rt 427, 2 mi N of Wyattville, Venango County, PA, 28 May 1958. Image courtesy of the Carnegie Museum of Natural History Herbarium.



Delesseria sanguinea.
(much covered with Corallinales)

ENDNOTES 📖

1 Richard Weir, "Neighborhood Report: Flushing; Old Tree May Be Benched", *The New York Times*, Jan. 17, 1999.

2 Gabriel Popkin, "Can Genetic Engineering Bring Back the American Chestnut?", *The New York Times Magazine*, April 30, 2020

3 "Heat-related Deaths in New York City, 2013", New York City Department of Health and Mental Hygiene, Epi Data Tables, No. 47, August 2014

4 "Faced with the financial crisis that began in 2007, some economic commentators did begin to talk of "zombie banks" – financial institutions that were in the "undead state" and incapable of fulfilling any positive function, but representing a threat to everything else. What they do not recognise is that 21st century capitalism as a whole is a zombie system, seemingly dead when it comes to achieving human goals and responding to human feelings, but capable of sudden spurts of activity that cause chaos all around". From Chris Harman, *Zombie Capitalism: Global Crisis and the Relevance of Marx*, Bookmarks Publications, 2009

5 Park, D.S., Feng, X., Akiyama, S. et al. The colonial legacy of herbaria. *Nat Hum Behav* 7, 1059–1068 (2023). <https://doi.org/10.1038/s41562-023-01616-7>

6 Andrea Wulf, *The Brother Gardeners: Botany, Empire and the Birth of an Obsession*, Vintage, 2010.

IMAGES 📖

COVER

FRONT: *Alliaria petiolata*, or garlic mustard, collected by WE Buker from Sarah Furnace, Clarion County, PA, 5 May 1976. Image courtesy of the Carnegie Museum of Natural History Herbarium.

BACK: *Cystoseira fibrosa* from Anna Atkins' Photographs of British Algae: Cyanotype Impressions, 1843. Courtesy of The New York Public Library Digital Collections.

PAGE 6

Ginkgo biloba L., collected by E. Mason, Allegheny County, PA, 11 May 1949. Image courtesy of the Carnegie Museum of Natural History Herbarium.

Ginkgo biloba L., collected by O.E Jennings, Morris Arboretum, Philadelphia, PA, 4 June, 1933. Image courtesy of the Carnegie Museum of Natural History Herbarium.

Wishing Tree, W 132nd Street and 7th Avenue, Manhattan, New York City, NY, 1936. Courtesy of The New York Public Library Digital Collections.

Children in New York's Harlem wish at "The Tree of Hope", Manhattan, New York City, NY, 1941–1945. Courtesy of The New York Public Library Digital Collections.

Richard Weir, Neighborhood Report: Flushing, "Old Tree May Be Benched", *The New York Times*, January 17, 1999, pg 196.

"New 'Wishing Tree' Stops Harlem Rain: Substitute for Old Elm Shows Its Power at Once", *The New York Times*, November 5, 1934, pg 21.

PAGE 7

Ginkgo biloba L., collected by N. Hodgson from South Side Cemetery, Pittsburgh, Allegheny County, PA, 31 Oct 1937. Image courtesy of the Carnegie Museum of Natural History Herbarium.

PAGE 10 📖 SMALL BLACK & WHITE INSERT

FRONT: *Castanea dentata* or American Chestnut, collected by J.S. Neill Co, Sodus Point, Wayne County, NY, 1 Oct 1960. Image courtesy of the National Museum of Natural History, Smithsonian Institution.

PAGE 11 📖 SMALL BLACK & WHITE INSERT

BACK: Karl Blossfeldt, *Plantstudie*, plate 19, *Urformen der Kunst*, 1928. Courtesy of the Rijks Museum.

Weeping Beech Park, Flushing, Queens, New York City, NY, 1942. Image Courtesy of The New York Public Library Digital Collections.

Old growth white pine in mixed hardwood stand, Dukes, Marquette County, MI, 20 May 1933. Department of Agriculture, US Forest Service. Image Courtesy of The National Archives and Records Administration and Digital Public Library of America.

PAGE 15 📖 SMALL COLOR INSERT

Delesseria sanguinea from Anna Atkins' Photographs of British Algae: Cyanotype Impressions, 1843. Courtesy of The New York Public Library Digital Collections.

RESOURCES & FURTHER READING 📖

MAGALI DUZANT

BOOKS & ARTICLES

- ◆ *How I Became A Tree*, Sumana Roy
- ◆ *My Garden*, Jamaica Kincaid
- ◆ *Botanical Drift*, Khadija Von Zinnenburg Carroll
- ◆ *The Language of Trees*, Katie Holten
- ◆ *Metamorphoses*, Ovid, translated by Stephanie McCarter
- ◆ Can Genetic Engineering bring back the American Chestnut, Gabriel Popkin for *The New York Times Magazine*
- ◆ Less than a tribute: when Latin names are insults, Stephen B. Heard, from the blog *Scientist Sees Squirrel*
- ◆ Herbarium based science in the twenty first century, Guillaume Besnard, Myriam Gaudeul, Sébastien Lavergne, Serge Muller, Germinal Rouhan, Alexander P. Sukhorukov, Alain Vanderpoorten & Florian Jabbour (2018), *Botany Letters*, 165:3-4, 323 327, DOI: 10.1080/23818107.2018.1482783

DOCUMENTARY & AUDIO

- ◆ Taming the Garden, documentary film by Salomé Jashi
- ◆ Grandfather of the Forest, This is Love Podcast: Episode 40
- ◆ Cooling Cities by Throwing Shade, National Geographic podcast

RESOURCES

- ◆ Collections and Resources at the New York Botanical Garden
- ◆ NY Public Library Picture Collection
- ◆ Smithsonian Open Access

MASON HEBERLING

BOOKS & ARTICLES

- ◆ *In the Herbarium: the Hidden World of Collecting and Preserving Plants*, Maura C. Flannery
- ◆ *Herbarium: The Quest to Preserve and Classify the World's Plants*, Barbara M. Thiers
- ◆ Herbarium World, Blog by Maura C. Flannery

RESOURCES

- ◆ Mid-Atlantic Herbaria Consortium, Digital Collection