



1 New Skills Learned at Longwood Gardens: A plunge cut with the 592 chainsaw.

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Final Report

A unique part of the Interchange Fellowship is the freedom to curate a year of experiences for yourself. I chose which sections of Longwood Gardens I wanted to work in, and where in the US I wanted to visit with the Garden Club of America Scholarship. I wanted to take the opportunity to experience completely new flora and horticultural techniques, as well as to consolidate my existing interest in ecological horticulture in a way that would help me to become a better horticulturist and leader back in the UK. Through my experiences this year I have a deeper understanding of conservation in public gardens in different climates, and what ecological horticulture looks like day to day. I was pleasantly surprised by the sense of community I experienced in US horticulture, on the local and national scale.

Ecological Horticulture

The week before moving to the USA I graduated from the three-year diploma at Royal Botanic Gardens, Kew. As part of the course I wrote a dissertation about what ecological horticulture meant in the Northeast of the USA. This year gave me the opportunity to be an active participant.

Once at Longwood, I spent many hours working towards a Wildland Firefighter Qualification. Just before the plants started greening up in spring, a group of students and staff dressed in flame retardant yellow trooped out to a meadow on the property. We proceeded to burn the brown vegetation and put out fires that were burning in the wrong place. I learned that a lot of the ecosystems on this continent have evolved with fire, through lightning strikes or management by indigenous peoples. The role of fire is to remove excess plant material from the ground which suppresses seed germination and could cause out of control fires. Fire prevents grasslands turning back into forest through the process of ecological succession, and it eases the pressure of invasive plants. This is an integral part of managing large areas of land across the USA.

I spent 3 months during spring with the Land Stewardship and Ecology team. Along with the Meadow and the Woodland Walk sections of the garden, they manage around 1000 acres of land and wildlife that are not accessible to the public. Stewardship Technicians participate in a deer hunting program, ensure wildlife and the public enjoy the garden harmoniously, undertake horticultural maintenance and design, and test different methods of invasive plant control.



2 Ecological Horticulture in progress. Poised to put out flames.



4 Wildland Firefighters at the Prescribed Burn at Longwood Gardens 2024



3 Land Stewardship Technician Ryan helps a snapping turtle away from a busy road and to safety.

Research Specialists use science to inform management protocols; they monitor and map the property and the ecosystems, undertake botanical surveys and ensure ecological services are functioning – such as storm water basins. The whole team record data about what they are doing and where in order to assess where most resources are being used. The team attend conferences and publish journal articles about land management best practices. Through working with them, I came to understand the rigor of scientific work and how it intersects with ecological horticulture on the ground.

Land management differs depending on the purpose of said land, whether it is for horticulture, conservation, hunting, agriculture etc. Meadow management and its associated plant communities were what I really loved working with and what I intend to further my understanding and work with when I return to the UK. They sit at the intersection of conservation and horticulture and are the sites of huge biodiversity.

Prairie

My interest in meadows was fed through a trip to explore the prairie's of the mid-west; in Illinois, Missouri and Indiana. I visited 7 prairies, the Mid-West Tallgrass Prairie Seed Bank and Pizzo Nursery. The Shaw Nature Reserve is located just outside of St Louis, MO and is managed by the Missouri Botanic Garden. The prairie is 2400 acres and is looked after by 40 staff, including Mike Saxton, Manager of Ecological Restoration and Land Stewardship. When looking at a prairie, I came to understand, it is biodiversity and the absence of invasives that indicate success. Mike says, 'the mission is ecosystem health, and the metric is biodiversity'. The site is made up of existing prairie which is maintained through invasive plant control and some supplementary seeding; and existing forest, which again requires invasive removal in addition to canopy opening. One large and ambitious piece of property



5 The Glade. A dolomite prairie filled with cone flower at the Shaw Nature Reserve, MO.

is being turned from evergreen forest to prairie through tree removal, large scale pesticide application and reseeding.

Seed is a huge part of the restoration process, it is collected by hand from populations of desired and ripe plants, they are taken back to the head house and cleaned and stored until the appropriate time to sow. This seed is supplemented with seed bought locally. Mike explained, that with prairie restoration it takes a few years to look good; 'in the first year it sleeps, in the second year it creeps, in the third year it leaps.'

The jewel in the crown of this site is the glade. A glade is an area where the bedrock is between a couple of inches and a few feet away from the surface. Meaning that the make-up of the rock influences the pH, as nutrients leach out over time. The exposed rock, higher elevation and lack of trees means this is also a very hot and dry environment. These factors affect which plant communities can live here, meaning more unusual species are given space and conditions to thrive. Here the bed rock is dolomite with calcium leaching out, leading to an alkaline or neutral soil. Some of the plants that thrive in this area are Missouri black-eyed susan, yellow coneflower, Missouri evening primrose, scurfy pea, and prairie turnip. Mike's job is to keep the forest encroaching into the prairie, with all sections of the site being burned around February time, every two out of three years. All the land managers I met on this trip love to burn, they have a wistful look in their eye when they describe the process to me.



6 This is what this section of the Schulenberg Prairie at the Moreton Arboretum, IL, looked like on burn day this year.

I visited Kurt Dreisilker at the Moreton Arboretum to see the Schulenberg Prairie. A beautifully maintained site with an exceptional volunteering program. My visit also coincided with an enormous cicada emergence, the 13 year brood and the 17 year brood both emerged at the same time. In some places in the forest the noise was so loud I had to put my fingers in my ears. The prairie is looked after predominantly by volunteers who weed the site, maintain trails and occasionally mow areas. All volunteers go through the Natural Areas Conservation Training Program, taught in the garden. This qualification enables volunteers to work without staff supervision on site, under a volunteer supervisor who has received special training for the role. It was a great community feeling, with a volunteer organised talks program- this weeks was about cicadas. This program means volunteers have autonomy and ownership of the site without being a lot of work for the staff. Kurt told

me with the skills they gain here they often go on to volunteer and lead programs elsewhere.

From this experience I take home knowledge about how large scale seed collection and sowing can be done for internal or commercial use, and how prairies are maintained on an enormous scale. I will take home memories of how it feels to be surrounded by flowers in these vast and beautiful landscapes. I think this is directly applicable to the UK, as one of our most precious ecosystems and popular garden displays are meadows. Many of the sites on my itinerary were visited by staff from Wakehurst in the run up to creating their own Tallgrass Prairie.



7 A family of Bison seen through binoculars at the Fermilab Prairie, Batavia, IL.

Conservation in Public Gardens

My final month at Longwood was spent working alongside horticultural icons, Peter Zale and Tony Aiello with Conservation Horticulture. I did micropropagation and meristem isolation in the lab, helped replot their extensive collection, and started to understand the process of orchid and camellia breeding. It was interesting to see how the priorities and methods differed to other conservation departments I had experienced this year. Longwood has a history of breeding *Clivia* and *Canna* for ornamental merit and consequently have a commitment to protecting this legacy through an in-vitro collection.

Native plants, including orchid *Platanthera*, are a conservation priority. Sites around the state have been identified, seed is collected and germination protocols are created. The team have worked out that the dormancy can be bypassed, and germination can be sped up if seed is sown while still slightly immature.



9 Isolating the meristem of a *Chrysanthemum* at Longwood Gardens.



8 Pollinating an Orchid at Longwood Gardens.

My first experience of tropical and sub-tropical flora was on a visit to Fairchild Botanic Garden in Miami, FL in January 2024. Seeing plants I had worked with at in the glasshouses at Kew Gardens growing in the wild was incredible. The conservation department at Fairchild are often employed by other land-owning agencies to undertake surveys or conservation work. I assisted with the clearing of invasive plants at a local beach with staff and volunteers. The team have a section of the gardens' expansive, chaotic, and completely charming nursery reserved for the propagation of native plants that will one day

end up back in the wild. They also get called into new development sites in the area to rescue interesting and important native plants before they get bulldozed.

I spent a special day with the team on Elliott Key, a uninhabited island in the Florida Keys. An all female team of marine biologists from Biscayne National Park took myself, some volunteers, and the Conservation Team led by Jennifer Possley to the island on a really fast boat. Our goal was to monitor the only remaining population of *Pseudopheonix sargentii* growing wild in the USA, it continues to be threatened by damage from hurricanes. The palms populations were recorded on an online map, which was at times difficult to follow because of the lack of phone signal on the island. Once found, we replaced old labels, measured the palms and confirmed their status on the database. It was assessed that the population was stable and they would continue to be monitored. At one point I almost stood on a large yellow rat snake, it had a big bulge in its stomach from a recently eaten rat. We were all wearing mosquito jackets with hoods and face coverings and I was recommended to walk with a stick in front of me to knock spiders out of my path. In some places the woody, shrubby vegetation was dense and it was difficult to move through. I realized that if I went out of earshot of the rest of the team I would be immediately lost. Everything looked the same as everything else. It was a privilege to go to such a remote location, with a team of talented people doing important work and to see a spectacular plant growing in its natural habitat.

Conservation can look very different depending on where you are in the USA, horticulturists need to understand several disciplines and to be part of a bigger network to make their efforts successful. At Naples Botanic Garden, FL, I was impressed by the network of conservation led by Chad Washburn alongside the BGCI. Its reach spread across the entire Caribbean region. This was a well-resourced garden leading international conservation in analogous climates, as well as local regional areas.



10 Standing next to a *Pseudopheonix sargentii* seedling on Elliott Key, FL.

Native Plants

Principles of ecological horticulture used in the US aren't necessarily applicable to the UK as attitudes and circumstances are different. Native plants were not historically valued by RBG Kew or the RHS, with UK native herbarium vouchers sent to the Natural History Museum instead of accepted into their own collections. Certainly, native plants are not prioritized in UK public gardens as they are in the US. Entire gardens, conferences and events are built around the celebration and knowledge sharing of native plants role in ecosystems and society. Using native plants in the US is widespread and accepted by the public and professionals. In the UK I can think of only a small section of Edinburgh Botanic Garden being dedicated to Scottish native plants. A small and under visited part of Kew Gardens is known as the Conservation Area and is dedicated to native plants, its more of a natural area than a garden. Native plants are not celebrated as they are in the US.

There are many arguments for their lack of importance in the UK; they are not beautiful enough to be in an ornamental garden, there aren't enough of them to make an entire garden from. Studies led by the RHS and Sheffield University have argued that non-native plants are just as beneficial to UK fauna. However, they were never able to rule out the positive effects of the presence of native plants. The studies were conducted on urban gardens that were disconnected from natural ecosystems and likely to have a very low baseline.

I feel woefully uneducated on the flora of my own country. It can't just be me? I think this lack of knowledge of plants and insects species extends to a lack of knowledge about the ecosystems present in the UK. With more awareness, UK native flora and landscapes could



11 A pipevine swallowtail feeds on nectar from *Asclepias syriaca* at the Shaw Nature Reserve, MO.

be more appreciated and more likely to be conserved. I hope to contribute towards this in the future.

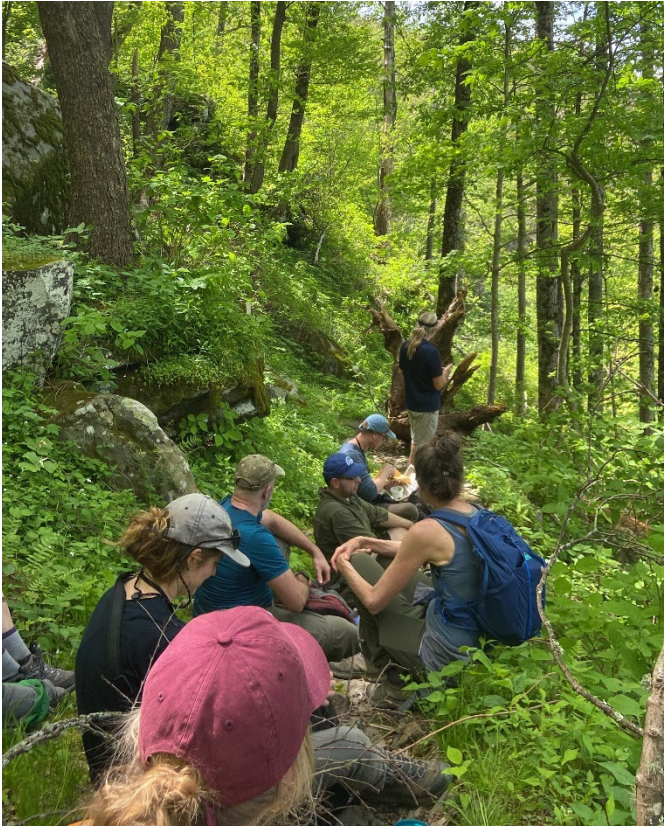
Community

My favorite trip in the US was to the Great Smoky Mountain National Park Spring Wildflower Pilgrimage in North Carolina. An annual event lasting four days with around 200 hikes and talks scheduled, all devoted to exploring the biodiversity of the region with experts. The campsite was home to the Blue Ghost Firefly and the only washing facilities were a freezing cold river filled with crawdads and salamanders. It was a great adventure to lie in my tent, listen to the Barred Owls talk to each other and worry about the potential of a bear wandering through camp. We looked at millipedes and lichen with UV torches, saw warblers while bird watching, had an encounter with a mother and baby bear, and hiked through some of the most incredible displays of wildflowers I have ever seen. To share the wonder of these vast wilderness with other plant enthusiasts was magnificent.

I was awarded a scholarship to the 4 day Cullowhee Native Plant Conference in western North Carolina. It was a deep dive into the passionate world of native plants and conservation and an excuse to spend more time in a favorite part of the country. Again, I feel inspired to continue to learn about UK flora, fauna and ecosystems and to contribute to their conservation and celebration within UK public gardens.

Attending the 5 day American Public Garden Conference in Boston this year was quite an experience. There were over 1000 people in attendance. The scale, alongside the quality of the trips, meals, and speakers was astounding. It was a great experience to talk to leaders of public gardens and to gain insight into what the current considerations of public gardens are. Diversity and inclusion are a main concern going forward. Sustainability in gardens, I don't feel was a priority; my experience of public gardens and households on the east coast of the USA echoes this. After this conference, I feel I am more aware of what it takes to be a leader in a public garden, and which gardens are innovating in different areas. It was inspiring to feel like a part of a global community working towards similar aims. I am motivated to find a role in the UK that will allow me to feel part of a community like this one.

The Interchange Fellowship Program itself gathers like-minded and driven people together. I have shared meals, garden tours and hikes with many past fellows, and been hosted with generosity by members of the GCA. I am proud to be a member of this community and grateful to everyone that has contributed to a remarkable year. Thank you to Longwood Gardens, Mary Frediani at the GCA, Rowena Wilson at the RHS and to all the friends I made along the way. I look forward to the surprising ways our paths might cross again in the future.



13 Hikers at the Smoky Mountain Wildflower Pilgrimage wait for a mother and baby bear move away from the path further down the mountain.



12 Trillium simile in the Smoky Mountains.



14 With UK horticulturists Alice Sleeper-Atkins and Jon Dixon in the Smoky Mountains.



15 The International Interns at Longwood Gardens 2023/ 2024.