

Hattie Moore
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RHS/ GCA Interchange Fellowship Midterm Report

The cars are big, the roads are big, the butterflies are big, the robins are big, the nature is big, and Longwood Garden itself is big. The biggest public garden in North America, in fact, at around 1,300 acres and expanding. I live in a wooden house with a porch, on a street with ten other student houses filled with people from all over the USA, and the rest of the world, who are also here to learn about horticulture. This is my home for the next 12 months and I couldn't be happier.



Figure 1 55 Red Lion Row, my home for the year.

My first placement is in the Central section of Outdoor Landscapes led by Pennsylvania native and venison sausage toting, Troy Sellars. The Central Team take me under their wing and give me advice on how to live in America, and where to go in the local area. Amy and Sarah take me around the Hillside Garden, which as you walk through the twisting paths, transforms from prairie to woodland. I helped the team plant herbaceous perennials and trees. They are much bigger trees than I had planted before, and Longwood uses many ingenious machines and techniques to get the big trees in place without trampling too many other plants. I spent time in the Rose Garden with Brianna, and with Jesse and Dave in the Main Fountain Gardens. I spent some of the placement helping the team, led by Sam, install a tunnel of Christmas lights in the meadow garden. I quickly learn that Christmas is a very big deal here. All I want to talk about is what a Katydid is, and why I had never heard of a Pawpaw before, but from the end of September onwards is Christmas. This was a great time to chat to the team about their own Christmas projects. Each member of the hort staff at Longwood has to design and build a part of the Christmas display, usually a decorated tree. Its an opportunity to be creative, have complete responsibility for an entire project and be part of a spectacular team effort.



Figure 3 Troy and the team getting a new Hemlock in place.



Figure 2 Caroline planting roses in the Rose Garden.

My second placement is in October with the East section of Outdoor Landscapes. Soon I was longing for Christmas lights, as was bulb season there. I spend the next month laying out, planting and netting 250,000 bulbs. My wrists and knees were tired but I have had wonderful conversations with staff and students from all over the garden. I made great friends during this placement and enjoyed the satisfying perfection of evenly placed daffodills, tulips, *Camassia* and *Iris*. I look forward to spring and the spectacular display that will follow. One friend, Lilly Turovsky, took me on a weekend trip to the Berkshires in Massachusetts, a beautiful part of the world. We went on dog walks, to farmers markets and to Robin Hill, a Dan Pearson Garden in Norfolk, CT. Head Gardener James McGrath, was so generous with his time, we spent the entire day wandering around the autumnal garden admiring the meadow, the woodland, the small rock garden, the cutting garden, the water features and small aesthetic details which made the place so special. I had previously only seen Dan Pearsons gardens in the UK it was wonderful to see one with a different plant palette and setting.

I spent November in the Conservatory, the hub of Christmas fever. All horticultural staff members spend up to a week helping to pull out the Chrysanthemum Festival and replace it with lilies, dogwood, pine trees and Christmas decorations. The Fern Floor transformed into a winter street scene and the Music Room became a festive 60's cocktail bar complete with bespoke Longwood glassware. We worked long hours under the watchful eye of Karl Gercens, planting every colour of poinsettia and composting *Crysanthemum*. Then all of a sudden the conservatory was open and the hard work was over. The remainder of the placement was spent maintaining the display, replacing trampled plants and watering the Christmas trees. A real highlight was working with waterlily experts, Suzanne Boom and Tim Jennings. We cleaned the seeds of different Victoria

hybrids before storing them, felt for *Nymphaea* tubers in smelly loam and imagined the new waterlily display opening in 2025 as part of the Longwood Reimagined project.



Figure 4 Avery Planting bulbs on the Brick Walk.



Figure 5 Planting Poinsettia's for the Christmas Display in the Conservatory.



Figure 6 The Thousand Bloom Chrysanthemum on display in the Longwood Conservatory.

Pennsylvania is cold at this time of year and winter is long. Luckily the Caribbean is near, and I took a weekend break to Puerto Rico to enjoy the beaches, the sun, the sea and El Yunque- the only tropical rainforest in US territory. Myself and another international intern, Monica, hiked through the rainforest, swam in rivers and listened to tree frogs in the evening. I had only seen these tropical plants in glasshouses in the UK, here they were growing wild in their natural habitat. The lush greenness and rich biodiversity of tropical places is unbelievable. As is the feeling of seeing plants you love, thriving in the place they evolved.

I spent December and January with the arborists, this is probably some of the most fun I have ever had at work. Fun doesn't mean easy, of course. In the UK arboriculture involves different qualifications and isn't something I've had a chance to do before. My ambition when I return to the UK is to manage a landscape, and I would like to be able to work with arborists with real understanding and appreciation for what they do. This is certainly something I learned with this team. Hearing the words 'just pull yourself up' from a large man that is leaping around a tree like a ballerina, while all 5ft2 of you is clinging to the end of a branch unable to connect mind and body and wondering if I ever really had core muscles, is a humbling experience. Luke Salata taught me how to use a chainsaw and helped me practice until I could do a plunge cut in the snow with the big 592 saw. Ben Wright taught me how to fell a tree and cut a perfect cookie. Justin Shelley and Josh Siebenaler showed me how to use my ropes, tie my knots and ascend and descend a tree. They never did attach me to the ball of the crane and spin me around like they said they would, but that's ok.



Figure 8 Doing a plunge cut on a felled tree with the big 592 saw. Figure 7 Unwrapping christmas lights from the ends of branches.

It snowed a few times this winter, each time the garden would turn into a wonderland of icicles, snow drifts and paths to be shovelled. Longwood Gardens is like a well-oiled machine in the snow, all the ploughs and staff immediately set to work to get the garden ready for visitors.

Whilst at Longwood I have had the unique opportunity to obtain a Basic Wildland Firefighter Certification. This allows me to take part in the prescribed burn of the meadow at Longwood which will take place when the weather is right some time before the end of April. We have spent 40

hours on the computer doing online training on the subjects such as emergency response coordination structure, wildfire behaviour, and weather patterns and effects on fire. We took part in a training day where we learned to build a fire line, use a hose and a fire hydrant, and light fires with a drip torch. Prescribed burning is an integral part of managing land in some parts of the US ecologically. I will look for opportunities to participate in prescribed burns in the UK in the future.

A big and exciting week was spent in Florida, the first of my trips funded by the Garden Club of America. I wanted to experience tropical and sub-tropical native flora and to find out both how they were managed in a garden setting and how they were conserved in the wild. I start the week with a day in the Everglades National Park, otherwise known as 'the river of grass'. It is my first National Park experience and I was shocked at the scale of it, once I got into the park it still took an hour to drive to the other side. I saw alligators and manatees, and acres and acres of sawgrass wetland. I learned that most of South Florida is overflow from Lake Okeechobee, forming a huge river 60 miles wide and 100 miles long filled mostly with sawgrass. Periphyton is an algae that provides for the rest of the food chain, it keeps amphibians and insects moist when the Everglades dries up over summer, which provide food birds fish and reptiles. Most of Miami is built on cleared and drained sections of this river.

As always, the staff at botanic gardens are endlessly generous with their time and knowledge. I joined the Conservation team at Fairchild Botanic Garden for a couple of days. I worked with Samantha Walsdorf and a group of volunteers at Virginia Key, a beach in Miami, an example of coastal strand habitat. We weeded the invasive *Richardia grandiflora* from the dunes to make way for the more delicate population of native *Jaquemontia reclinata*, or beach cluster vine. Sam had scoped out the population before hand and had marked all individuals with small flags and on an online map. The population gets monitored and the area gets cleared once a year. We also cut back branches of the *Coccoloba unvifera* or sea grape which had been planted too near to the coast line, not allowing space for the dune system and plants. After hurricanes people often hurry to restore public areas to a presentable state and sea grapes are a fast growing and attractive coastline species. A really wonderful native plant I discovered in Florida is the saw palmetto *Serenoa repens*. This palm grows extremely slowly and horizontally along the ground, layering itself as it goes, some clones have been projected to be alive for up to 10,000 years¹.

The rest of the day was spent at Fairchild Botanic Garden exploring the parts open to visitors. In the centre is an iconic mature rainforest, kept damp with outdoor misting units creating a unique atmosphere for the plants and the visitors. I imagine in the Florida summer this is a cool oasis for the public. The Conservation team is usually contracted out by other organisations, or the state, to take care of populations of threatened plants. Therefore the team has a smaller presence in the garden, there is a small native seed bank and laboratory that the public can enter. They currently have no sections of the garden that they look after directly, although there is a native garden and the gardens arboretum encompasses a native mangrove. Most of the teams work happens in the field through monitoring populations of threatened and endangered plants and making conservation efforts like the one I had helped with that morning- a kind of aftercare to existing or reintroduced populations. Equally, they 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 plants before they get bulldozed.

The following day I went with the team to Elliott Key, an uninhabited island in the Florida Keys. An all female team of marine biologists from the 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* or Sargents Cherry Palm growing wild in the USA. The population was not thriving, the island had suffered a lot of storm damage during recent hurricanes, but efforts to repopulate the island had been taken. The oldest

¹ Takahashi MK, Horner LM, Kubota T, Keller NA, Abrahamson WG. Extensive clonal spread and extreme longevity in saw palmetto, a foundation clonal plant. *Mol Ecol*. 2011 Sep;20(18):3730-42. doi: 10.1111/j.1365-294X.2011.05212.x. Epub 2011 Aug 16. PMID: 21848843.

of the palms was around 30 years old and was surrounded by seedlings. We took small buggy's deeper into the island, clearing broken trees from the path as we went. We had to get out and walk once we met a population of *Hippomane mancinella* or the machineel tree. This is otherwise known as the most toxic tree in the world, with all parts being poisonous. It was fine to brush past the plant, it is the sap that really needed to be avoided, and bringing the vehicle through would break the plants and create a lot of potential for painful blisters or worse. Again, palm populations were recorded on an online map, which at times was difficult to follow because of the lack of phone signal on the island. Once we had tracked down the populations of the palms, the team replaced labels, measured the palms and confirmed their status on the database. 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, and this was why it hadn't slithered away when it had seen us coming. It was assessed that the population of palms was stable and the team would continue to monitor. 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 realised that if I went out of earshot of the rest of the team I would immediately be lost. I didn't have a GPS or compass and everything looked exactly the same as everything else on the island. It was a real privilege to go to such a remote location, with a team of talented people doing wonderful work and see a spectacular plant growing in its natural habitat. I don't think I will ever forget it.



Figure 10 Standing with a *Pseudopheonix sargentii* on Elliott Key, Florida.



Figure 9 The aquatics tanks in the nursery at Naples Botanic Garden, Florida.

The following two days were spent at Naples botanic Garden, a relatively new garden on the Gulf Coast of Florida. An intense itinerary was laid out for me with tours of the garden. Matthew Herrman, Head of Special Collections, such as tropical fruits and aquatics, took me around. The Garden is beautifully designed and the architecture of the waterlily ponds perfectly shows them off. It has a great collection of plants from tropical and sub-tropical countries such as Brazil, the Caribbean, Southeast Asia and Florida. The garden is beautifully maintained and it was special to see more of the plants I had only worked with in glasshouses in the UK thriving outside. The

garden mixes tropical fruit trees and shrubs in with the rest of the collection, meaning that the experience of moving through the garden is more interactive, Matt was passing me fruits to try and labels helped me understand what I was looking at, and a way of relating to it. I was shown around the newly built, but not yet opened nursery and horticulture building, a very exciting new project which will consolidate the nurseries at Fairchild into one area. I was toured around the orchid collection and orchid garden. Florida is known for epiphytic orchids such as the ghost orchid, it wasn't quite the right time of year to see it in bloom but it was special to see their grey roots wrapped around a tree along a swamp board walk, giving a sense of what they look like in the wild.

Naples Botanic Garden has a large amount of natural lands within its boundaries and Eric Foht has the enviable job of managing it as Natural Resources Manager. I especially enjoyed my tour with Eric, he had great enthusiasm for the natural world and the ecosystems he was stewarding. Some of what Eric's team looks after is the storm water run off swales around buildings and parking lots, they turn out to be interesting micro-ecosystems. As long as they are providing drainage for tropical storms and shade for pedestrians and parked cars, weed seeds are allowed to germinate and native plants are taking hold. One of the reasons I came to the USA was to understand how land management can be undertaken ecologically within a public garden. Ecology and horticulture are somewhat separate in gardens in the UK and roles like Eric's over here in the USA, combines



Figure 11 Drosera spp. flowering at Naples Botanic Garden, Florida after a burn.



Figure 12 A palm growing in an unusual way in the Fakahatchee Strand State Park, Florida.

them. From talking to people like Eric I learn methods of managing an area of land in ways that welcome the public, works with the mission of the public garden and is sensitive to the natural environment. Eric talked to me about some of the affects of hurricanes Irma in 2017 and Ian in 2022. For him the most destructive was the massive flooding of salt water across the botanic garden damaging plants and infrastructure.

Recently I had completed the Basic Wildland Firefighter Certification training and it was great to see two sections of the natural areas that had been burned and were in different stages of recovery, one section burned a year ago, another 3 years ago. The blackened saw palmetto was sprouting new green fronds. Eric candidly told me that the most recent burn had killed more trees

than he had intended. He said the recent stress from the hurricane, plus a hot summer, had possibly weakened the trees and prevented them from springing back so successfully. He showed me the difference in the duff layer before and after fire, in some places the pine needles and leaf material was up to 5 inches deep and smothering wildflower seeds. Where the fire had burned through, new plants were germinating, such as *Drosera* sp. which was now in flower, *Hypoxis juncea*, *Eringium aromaticum*, and fresh green *Opuntia* sp. There was even an *Epidendrum rigidum* growing on a tree.

I toured around the lab, seed storage and nurseries of the conservation team. They are working on dunes restoration projects in the wake of the hurricane, conserving Puerto Rican cacti, propagating *Persea palustris*, a native plant which is suffering from fungal diseases in the local area. I spoke with Chad Washburn, Director of Conservation and Education, about the scope of their conservation efforts. He has made Naples botanic Garden a hub of conservation in the tropical and sub-tropical region and is a point of contact for many Botanic Gardens in the region.

With Matt Herrman from Naples botanic Garden I went on a swamp walk in the Fakahatchee Strand State Park. Waist deep in warm, dark water with trainers and trousers on we experienced the immense biodiversity of the swamp. It was an overwhelming experience, once you're in the swamp its very quiet, much cooler, and you have to move very slowly so as not to bang your legs on a log, pneumatophores of the *Taxodium distichum* and to be able to manage the depth changes. You also have to use a stick, this is to test where you are putting your feet- alligators and snakes, although less active at this time of year, are often lying in the bottom of the pools where the water is warmer. We saw nursery logs, large floating logs which have a huge amount of different small plants growing on them. There was evidence of previous bromeliad conservation projects- the native *Tillandsia utriculata* population had been drastically reduced by the Mexican Bromeliad weevil, after conservation efforts the population seemed to be stabilising. We saw a number of orchids including: the jingle bell orchid- *Dendrophylax porrectus*, *Epidendrum acneps*, and *Epidendrum rigidum*. We saw an enormous fishing spider (I was too scared to go near and take a picture), these are spiders that zoom down into the water and catch and eat small fish that stray too near the surface. I was grateful to have unbelievable guides, Karen Relish, who goes into the swamp about twice a week and has been doing this for many years. Ryan and Blayre also joined us, they are naturalists with incredible knowledge and I have connected with them on Instagram.

My current placement is in the woody nursery, with a very friendly and supportive team. The role of the nursery is to conserve and grow on material from significant trees from Longwood's history, to supply the garden with woody plants for planting and to maintain the woody plants used in the rotating conservatory displays. We spent a lot of time moving plants in and out of the garden. We used the Pazzaglia machine to scoop out trees with perfect root balls and wrapped them in burlap and metal baskets. Gardeners come to the nursery, look around and tag plants that they would want in their areas of the garden. Pat, the manager, used to work in the nursery industry and he is able to easily source most of the plants the gardeners may need. We did some nursery maintenance and propagated some plants that are to be removed from the garden. Pat is teaching a class about propagating and sourcing woody plants for the Pro-hort students and invited me to join some of the lectures, including; pruning *Nyssa*, hearing a plant broker speak about her role, and a visit to an incredible native nursery called Octoraro. This nursery is filling a niche role in the industry, due to recent government investment in river bank consolidation there is a deficit of native trees available to buy. This nursery works with local land owners and home owners to collect local tree seed, propagate it and grow on whips of native plants. The staff were driven and committed to doing the best for the environment and it was great to hear them speak.

Other trips we have been going on during our Thursday trips are: Mt Cuba Centre (one of my favourite gardens in the world), Chanticleer (also great), Cheslen nature preserve- hearing from the manager about looking after a large amount of land with a tiny team and preserving unique Serpentine Barrens ecosystem, Philadelphia zoo, the Baltimore aquarium, Jenkins Arboretum and North Creek Nurseries to name just a few. A real favorite of mine was assisting to judge the Unionville Fair, a fruit and vegetable competition. Ive had the opportunity to attend the Perennial

Plant Conference at Swarthmore Arboretum, Longwood Gardens Today's Horticulture Conference, and the Ecological Landscape Alliance Resilient Futures Conference.

I've made wonderful friendships here, met inspiring horticulturists and conservationists, and learned about incredible new plants and ecosystems. It's already been an unforgettable six months and I think the best is yet to come.



Figure 13 The International Interns at Longwood 2023/2024. Left to Right: Jolene, Saad, Monica, Charlotte, Joy, myself, Jyoti.