

Longwood GCA/ RHS Fellowship Mid-Year Placement Report

Introduction

The GCA/ RHS Interchange Fellowship is a one-year, paid internship at Longwood Gardens, USA. The opportunity allows UK students to live and work at Longwood, joining weekly intern excursions to various gardens, museums or areas of horticultural interest, all with the learning objective of furthering interest and knowledge in both horticulture and American culture. On top of the opportunities created by working at Longwood Gardens, RHS/ GCA Fellows also have a bursary from the Garden Club of America, which allows domestic travel to gardens or conferences within the USA. The aim of this is to further personal interests, make connections, as well as attend the American Public Gardens Association Conference, which is held this year in Portland, Oregon.



Figure 1: Conservatories with Phalaenopsis orbs, January 2020

Previously known as the McClaren Trust, the Interchange Fellowship has been a successful horticultural venture for over 60 years. This year, Longwood Gardens is hosting two fellows, myself and Henry McBeath.

Personal objectives for applying for the Fellowship include:

- The opportunity to work at an ornamental display garden
- The opportunity to learn about a new country's native flora and ecology
- The opportunity to live and travel within the United States for one whole year!

Almost 6 months in, the Interchange Fellowship is proving a delightful adventure in every way. Travelling along the East Coast is easy, with numerous trips to New York and Philadelphia. Working in a more ornamental garden than I have previously experienced has resulted in many new skills acquired including improved plant knowledge of bedding species. Spring cannot come soon enough to start to experience the native flora of the region.

Longwood Rotations

1. Production

First placement at the gardens was with the Production team, assisting with the annual Chrysanthemum Festival. 2019 was a particularly exciting year for students, staff and guests as the festival was accompanied by a Sogetsu installation, never before showcased outside of Japan. Having spent the first week of the placement with the team at Lower Hort Production, I was pleased when tasks slowed down to be able to move locations and work with the bonsai 'Mums'. Every year a myriad of chrysanthemum shapes are created by the production team. This year, running with the Japan theme, a Japanese flag of two Mum varieties, various Pagodas and of course the 'Thousand Bloom Mum' were all in progress around the time of my arrival. Jobs included disbudding (removing excess terminal buds to promote energy into a single bud), and tying in developing buds to 'rindai' supports. This was a real change to the type of work I have previous experience of, and it was interesting to be learning entirely new skills, predominantly working to tiny details. The dedication among staff members to keep everyday practices in keeping with the Japanese heritage of Chrysanthemum bonsais was quite inspiring. This included watering using a ladle and the use of other Japanese traditions such as Rindai supports. The attention to detail applied to every task was an inspiration and will surely be applied to other tasks in future.



Figure 2: Staking Solanum the Longwood way

There are numerous opportunities outside of the working day to get involved in the Conservatory displays, and doing overtime helping create elaborate bamboo sculptures with Japanese experts was a real joy. The 2019 chrysanthemum festival was supplemented with an exhibit by Sogetsu, in which two large bamboo sculptures were created on the Fern Floor and Main Walk. Around the conservatory these were supplemented by smaller floral arrangements of Japanese style. Being part of the Longwood team for this felt incredibly significant. Having had a long held interest in Japanese gardens and culture, I loved learning about the floral arrangements and the history of the art.

2. Conservatories

Having supplemented the conservatory staff along with other interns during peak times during the chrysanthemum festival, I was pleased to have a second placement in the Conservatory itself. Spending most of the working week in the Main Conservatory, the fast turn around of bedding displays was extraordinary. A whole corridor could be ripped out and replanted in just a few short hours, with regular deliveries of plants from the production teams resulting in huge lines of newly potted chrysanthemums, ferns or bulbs.

Interacting with guests on a daily basis highlighted how much the public are in awe of the Longwood displays, which is a morale boost for all staff who work so hard to keep standards high.

The Conservatories are world renowned not only for their bedding displays but also the Waterlily pools with fantastic collections of *Nymphaea* and *Victoria*. Having arrived in September, I was able to see many species still flowering, helping with the daily maintenance



Figure 3: Planting Chrysanthemums during a change out, November 2019

of the pools including cutting back dehiscing leaves and flowers. The most exciting part of this work perhaps came in late October when the annual cut back began, and we started to remove plants for winter storage in the Nurseries. This involved hours in the pools in waders, moving plants to different areas and learning which species can be saved and which are treated as annuals. The *Victoria* species are composted each year, seed having been collected in summer to sow in January. These are perhaps the most difficult to manage, huge thorns on the underside of each leaf spanning up to 1m, making them very difficult to remove without injury. Doing this in the company of curious members of the public adds a whole new element to aquatic horticulture.

Tim Jennings has been responsible for the aquatic displays for over 20 years, and is a wealth of knowledge on Nymphaeaceae. Seed from the *Victoria* plants had been collected earlier in the year, and will be sown around the end of January to continue the display cycle.

3. Research

My third placement at Longwood has been with the Research team, an incredible opportunity to learn lab skills. The gardens rely on Tissue Culture to store their *Canna* and *Chrysanthemum* collections in a virus free environment. High levels of virus prevail in both genera in the industry, and their importance to the collection at Longwood mean that virus introduction could be potentially catastrophic. For this reason, all species are kept in test tubes in the Longwood Lab. Plants can be composted at the end of the year, starting afresh in the new season with clean stock supplied by the Research Team.

Learning how to do meristem isolation of *Canna*, one of the only ways to ensure virus free material in a virused plant (without seed), was a completely new skill to me. Working in the sterile hood using microscopes required patience and a steady hand, both good features of a successful horticulturalist regardless of a science background. I was particularly pleased to learn that all the *Canna* meristem extractions had worked, with no contamination. This was a new success to the team, and I shared their enthusiasm for what this would mean in terms of being able to conserve previously virused stock.

The shrub *Buxus* (Boxwood), is suffering in the US, as it is in the UK, with the blight pathogen *Cylindrocladium pseudonaviculatum*. Currently a large collection of different *Buxus* species resides in the Longwood Nursery, both planted out in nursery beds and in pots within the polytunnels. Potting on these species, most of which were of wild origin, was an important task, ensuring that healthy material can be supplied in the future, should any of Longwood's plants fall victim to the blight.

4. Integrated Pest Management

Integrated Pest Management (IPM), has a vital role within Longwood Gardens and throughout the horticultural industry. The team here has responsibility over the chemicals applied to different areas at Longwood, trying to supplement or replace them with beneficial insects at any opportunity. The Rose House is a fine example of a glasshouse in need of an IPM program, being an area with huge pest populations. Currently spidermite are almost impossible to eradicate from the *Rosa* species, with mealybug and whitefly found on the *Hubiscus*. Despite numerous chemical applications, the spidermite populations in particular have been very different to control. For this reason, high number of beneficial insects are applied to each crop on a regular basis, hoping to control the populations in between chemical sprays. On top of this, interns go into the house daily to wipe off metal railings where mites also reside in vast numbers. Learning how to time chemical sprays so as not to impact beneficial insect populations, or else not to overdose



Figure 4: Scouting for pests at the Green Wall November 2019



Figure 5: The very cute but ineffective pest control cat program. January 2020

on chemical applications was an important learning curve, one that will be vital for any career working under glass.

My placement with the IPM team was mainly spent scouting for pests, checking mouse traps or using the goose laser to scare off geese from the two ponds in the Longwood grounds. Scouting is an important activity, as it monitors pests and their numbers, as well as giving an indication for the chemicals or beneficial insects that should be applied. All new plant material entering the nursery (usually from Florida or California), is scouted to ensure no new

pests are bought into the nursery. Should any be found, plants can be quarantined before being sprayed.

Mouse and rat traps are put out in regular locations throughout the visitor centres, nursery coolers and display houses. Mice in particular can cause damage to growing plants, as well as being considered unhygienic to human health. Rodents are baited using peanut butter. This method is more efficient than Longwoods current cat program, these 'predators' seeming much more content to lie in wait of visitors to dote on them, than make any real dent in the rodent populations.

Canada Geese, despite being a protected species, cause havoc on the grass areas and ponds at Longwood. The high nutrient load deposited into the waterways when geese defecate in the ponds can lead to eutrophication, and in turn algal blooms which can reduce oxygen levels in the water, and allow faster growing plants outcompete more desirable plant species. A goose laser, therefore is an effective way of scaring off geese, even if it is just until the following morning.

5. Conservatory

I was pleased to be back in the Conservatories for a second placement, already knowing the routine making it much easier to settle into being a useful member of the team. With the Christmas season over, the first two weeks of this placement was spent tearing out the Christmas displays, for which the

whole Conservatory was closed for a week. Hanging baskets were removed and dismantled, Poinsettias were composted, and Christmas decorations were put away. As soon as one bed was cleared, new plants were put in place. The whole operation was surprisingly smooth considering the scale of tasks, and it was an important lesson in job prioritization and team work.

With the main conservatory planting complete and reopened, interns were able to relocate to other teams for more specific jobs. Working with the Orchid team is always a joy, whether this is repotting *Cattleya* or staking *Laelia*. I was able to work with the display team, observing the careful measures they go to creating magnificent displays with orchids of various genera, shape and size. The orchid display house was first put in by P. S Du Pont to house plants collected by his wife Alice. Today, Longwood cares for up to 4000 individual plants, with the ability for a large flowering display every day of the year. Small details, such as ensuring pot uniformity, and hiding labels was important to pick up on, and such skills in high attention to detail can be applied to any task in display horticulture. I valued the opportunity to work with the Orchid Volunteers, many of which have donated thousands of hours to the gardens across many years.

Setting up for the Orchid Extravaganza, which begins in February, had similarities to the other major display seasons. However, the idea of using large orchids as bedding crops is a completely novel concept, one that I feel works very well.



Figure 6: Repotting *Dendrobium*, January 2020

My sixth placement at Longwood, making the half way point of my internship, will be continued in the Conservatories. I am fairly certain I would like a career under glass following the Interchange Fellowship, and I am enjoying filling any gaps in my current knowledge with the Conservatory team.

Extra Curricular Excursions

The fellowship at Longwood also incorporates fantastic opportunities to travel and learn about American culture. Trips to local gardens such as Chanticleer, Mount Cuba and Winterthur are all part of the curriculum, as well as less botanically themed institutions such as the Delaware Museum of Natural History. Christmas was a lot of fun, with a student outing to the Delaware Centre for Horticulture to learn how to make festive table decorations, before going for a pizza lunch. Learning how to use plants in floral arrangements was a completely new skill, and one that I very much enjoyed.



Figure 7: Learning how to make table displays, December 2019

GCA Opportunities

We had a warm reception to the Garden Club of America, being invited for dinner by Betsy McCoy, GCA representative, within our first month in Pennsylvania. She gave us ample inspiration for opportunities within the local area and wider United States, as well as recounting many humorous tales and fond memories of past GCA fellows. Such hospitality was furthered with a GCA event in the Conservatory in November 2019, with a special evening event with drinks and canopies for GCA members. We very much enjoyed meeting members of the club, and hearing how they came to be members and what opportunities they have taken from the organisation. Most of whom are incredibly well travelled, it was fun sharing stories of UK gardens, as well as gladly accepting advice as to best gardens to visit in the US.

I was invited to give a talk to a Philadelphia branch of the GCA in January 2020. Based in Haverford, PA, I travelled with Ray Carter, Education Assistant, and gave a talk to a group of around 50 GCA members on the Royal Botanic Gardens Kew. I enjoyed the opportunity to share my own experiences of one of my favourite UK gardens, and it was fun chatting over lunch after to members and hearing their own experiences.