

K-12 Career Education: Inspiring the Next Generation of Garden Professionals

Courtney Allen, The Huntington Library, Art Collections, and Botanical Gardens

Cindy Brown, Smithsonian Gardens

Lori Trexler, Longwood Gardens



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Introduction

When did you first become interested in a career in horticulture?



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Things we know...

- Kids are not playing outside as much as they did 20 years ago
- Many K-12 students are not exposed to the term horticulture
- There is a lack of understanding and awareness that horticulture is a viable career option
- Enrollment is decreasing in academic programs focused on horticulture resulting in closure and consolidation into larger plant science programs



When considering a career...

- 96% of students want to make a difference
- 86% of students want to be innovative and creative
- 82% of students want to be outside of the office
- 78% of students want to create with their hands



Role of Public Gardens

- Be plant mentors
- Engage kids early in horticulture through hands-on experiences, field trips, and discussion
- Provide professional development opportunities for teachers to help integrate horticulture into the curriculum



Careers in Conservation

Courtney Allen

Botanical Education Manager

The Huntington Library, Art Collections, and Botanical Gardens



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Huntington Education

- To reach out and effect real and measurable good in our local communities
- To support lifelong learning in various ways
- To create replicable models of engagement



To design and implement opportunities for visitors and potential audiences to discover the extraordinary lives, qualities, and uses of plants in their diverse cultural and environmental contexts



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Integrated Approach

teacher training

public youth programs

school partnerships

school programs

internships

community collaborations

digital distance learning tools



Torres High School, East Los Angeles



Partnership Goals:

- Have a positive, lasting impact on students
- Support classroom teaching
- Efficiently use resources
- Collections-based
- Draw upon research and best practices
- Replicable



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Careers in Conservation



Objectives:

- Content
- Career
- Community
- Character
- Confidence



Careers in Conservation



Design:

- Site Visits
- Huntington Standard
- Application
- Networking
- Presentations



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Findings



“We didn’t think we were qualified to have an opinion – but we are!”

“We are teaching our community”

“This showed me that I can pick a job I like.”

“We can use this knowledge to improve our professional life, no matter what it is.”

“We are learning how our values translate into the kind of skills and environments we want to work in.”



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Future

- Content, Approach, and Structure Changes
- Increased Student Exposure
- Further Teacher Engagement
- Funding



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Career Programs

Cindy Brown
Education Specialist
Smithsonian Gardens



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Smithsonian Gardens



YES! intern Jordan. During her internship with Smithsonian Gardens, she learned how a greenhouse operates. “My mentor Monty opened my eyes to the complexity of the operation and everything needed to run the greenhouses from the inside out.”

YES!

Youth Engagement through Science

- 12-week career immersion and science communication program for 20 Washington, D.C. high school students
- Hands-on science internship with Smithsonian science staff, including Smithsonian Gardens
- Attend creative studio workshops, participate in a college preparatory program, and create a community outreach project about their science experience.
- Students receive a stipend of \$1,750

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Smithsonian Gardens

Highlights:

- Gave SG staff opportunity to work with high school students
- Combined resources created robust program
- Sites developed stronger relationship

Outcomes:

- Increased visibility within SI science units
- Planted seeds for culturing a unique SG program

Next Steps:

- Promote opportunity in schools with greenhouses, gardens
- Increase number of SG mentors
- Identify partner school to extend experience
- Keep track of program graduates



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Smithsonian Gardens

Highlights:

- Introduction to careers in science
- Guidance in college preparation
- Experience in community leadership
- Initiation to professional behavior

Outcomes:

- Students have a better understanding of diversity in science careers
- More aware of resources available at the Smithsonian

Next Steps:

- Continue with the program for multiple years in advanced internships
- Return as an undergraduate intern

We're All In This Together!

National Museum of Natural History

Danny Ayele, Grade 10, Capital City Public Charter School, Washington, D.C.
Mentor: Alex Dencker, Horticulturist at Smithsonian Gardens

Garden Maintenance

I would begin the day at my Smithsonian Gardens internship by heading down to the National Air and Space Museum (NASM) with my mentor Alex to perform basic maintenance on the small gardens that surround the museum. This includes hydrating the plants by watering them, pulling unnecessary weeds within the gardens, fertilizing the plants, digging holes to place plants in, and raking the soil to prevent the growth of unwanted weeds. A horticulturist's role in maintaining a garden is critical because they ensure the survival and health of the plants, especially in an urban setting. They also create a lively atmosphere for the visitors of the museum.



Me using a cutter to remove weeds from under growing plants on the south side garden of the museum. (NASM)



A photo of a small garden outside the rear entrance to the museum (NASM)

The Connection

Essentially, my day at my Smithsonian Gardens internship is split in two with garden maintenance at NASM gardens and research on pollinators, specifically nocturnal ones. So, how do these two topics connect? Referring back to the title, I believe that both the horticulturists that conserve the gardens and the pollinators that visit are both making efforts for the same goal! Both are making actions to restore and maintain the plants that grow within the garden, kind of like co-workers, except one has a night shift. Pollinators are becoming endangered and you can also help by growing plants that can feed these caretakers.



Me using a shovel to dig holes for plants on the south side of the Air and Space museum. (NASM)

Nighttime Pollinators

At the Smithsonian Gardens, I conducted independent research on nocturnal pollinators. I interviewed employees at the Smithsonian Institution including a horticulturist, a geologist, and an entomologist about nighttime pollinators. What is pollination and why is it important? Pollination is the process of pollen being transported by a pollinator from one plant of the same kind to another. This process let's plants cross pollinate to reproduce, allows the pollinator to receive a food source like nectar, and ultimately produces food for organisms to consume. At least one-third of the world's crops depends on the pollination provided by pollinators. Through my research, I concluded that there are not many differences between diurnal and nocturnal pollinators. The main difference is that nocturnal pollinators do not rely on sight to navigate, they are attracted to the flowers by the sweet fragrance they release or the color and structure of the flower. Since bats are visually impaired, they use their sense of hearing in the dark to navigate.



My mentor Alex spreading fertilizer (dried chicken manure) on plants outside the entrance of the museum. (NASM)



A photo of brugmansia (Angel trumpet) flowers that produces sweet scents in the Haupt garden

A pollinating bee flying around multiple flowers in the Haupt garden.

Acknowledgements

I would like to thank my mentor Alex for allowing me to work in the gardens with him. Another thanks to Paula, Brett, Cynthia, and Matt for supporting largely while working at capital gallery. Final thanks to the YES! Program staff for assisting me throughout my internship and giving me this great opportunity.



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Smithsonian Gardens



Career Day

Tour of gardens
Introduction to variety of staff

Online resource: So you want to be a Horticulturist?

- Careers in Horticulture
- Related Degree Programs (local to D.C. area)
- Web Resources

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Virtual Field Trips

Lori Trexler

Coordinator of School and Youth Programs

Longwood Gardens



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School and Youth Programs at Longwood

- Onsite Curriculum-Based Programs
- Self-Directed Curriculum Activities
- Teacher Professional Development
- Summer Camps
- Scout Programs
- Teen Volunteer Program
- Virtual Field Trips



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Virtual Field Trips

- Real-time learning environment that connects students around the world to Longwood Gardens
- Programs incorporate student participation and encourage interaction
- Limited technology is required to connect



Virtual Field Trips – Benefits

- Exposes students to institutions they may not be able to visit
- Connects students to the experts
- Reduces the cost and time associated with school trips by eliminating travel



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Virtual Field Trip: Careers in Horticulture

Program Format

- Welcome to Longwood Gardens
- Define Horticulture
- Address education requirements
- Hear from Longwood's staff about their journey into horticulture
- Discuss a variety of careers in horticulture
- Question and answer session

Materials

- Teacher guide
- Pre- and post-activities
- Student handout



Program Impact

Career Program Impact:

- 300 Students
- 6 States



“Program gave a good overview of horticulture and had people working in the field discuss what they do and how they ended up there. I could see that students who might never have considered this as a career path were interested.”

“This allowed them to see that horticulture is a broad subject with many opportunities.”

“The students enjoyed having access to Longwood Gardens as many of them will never experience going there.”



Future Growth

- Increase student and teacher participation
- Provide additional opportunities to connect with Longwood staff
- Expand the reach of the program and the number of students impacted



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Discussion Questions

- What type of career-focused programs do you currently offer at your institution?
- What challenges have you encountered with career-focused programs? What have been some of your successes?
- How do you plan on addressing careers in horticulture at your institution in the future?



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