Conserving, Preserving and Training the Next Generation of Botanic Garden Horticulturists

Tim Hughes, Charles Hunter, Maggie Kilian, Brian Trader, Andrew Wyatt, and Charles Yurgalevitch
Botanic Garden Horticulturists-
A threatened species

- Globally, fewer youth entering profession
- Shrinking university and college programs
- Consolidation of degrees
- Faculty retirement and realignment of responsibilities
Why is this happening?

- Lack of awareness and understanding of profession
- Less time spent outside, less immersion in nature
- Confusion with agriculture
- Disconnect with gardening family members
How are we confronting the issue...Opportunity!

- **National initiatives**
  - UK: Horticulture Matters
    - Young Hort
    - Grow Careers
  - USA: Seed Your Future, National Study of Horticulture
The Professional Gardener ‘PG’ Program

- Began in 1970
- 2-year program
- ~270 alumni
- Tuition free
- Free onsite housing
- Paid stipend
Curriculum

- Based on credit hours
- Terminal degreed instructors
- Approximately 30 courses
  - 15 HORT
  - 4 LAND
  - 5 PLANT
  - 5 Support
- Hybrid learning
Course Examples

- Horticulture
  - Plant Propagation
  - Greenhouse Management
  - Fruit and Vegetable Culture
- Landscape Design
  - Introduction to Landscape Design
  - Introduction to Landscape Design and Construction
- Plant Science
  - Entomology
  - Weed Identification and Management
  - Plant Pathology
Articulation

- Temple University
- University of Delaware
- Rutgers University
- **University of Maryland**
- In discussion
  - Penn State
  - Cornell
Experiential Learning

• 12 Work Rotations
  • 8 mandatory (one month each)
    • Arboriculture
    • Conservatory Management
    • Greenhouse Production
    • Horticultural Research
    • Integrated Pest Management
    • Nursery Management
    • Outdoor Display
    • Turf Management
Experiential Learning

• 4 Optional rotations
  • Focus in an area already required
  • Natural Lands Management
  • Plant Records Management
  • Plumbing
  • Education
  • Etc.
Experiential Learning

- Project-based learning
- Student Exhibition Garden
- Garden Practicum
- Vegetable Venture
- Study Abroad Course
- Outreach
Native Lands Management

- Meadow Garden - 2014
- Natural Lands Stewardship
- Bivalve water purification
- Biological/Beneficial Pest management
- Chemical use reduction
Student Exhibition Garden

- **Purpose:** Showcase student talent and offer real-world experience

- **How does it work?**
  - Three courses
  - 6 months
  - 4 installation days
  - 10 guided tours
  - Management to Longwood standards
  - Interpretation
Vegetable Venture

• Since 2010
• Partnership with Longwood’s Certified Green Terrace Restaurant
• Student-managed
• Outcome-based
Study abroad

- Practical experience
- Student-driven
- Immersive experiences
- International horticultural exposure
Outreach

- Core value of Community engagement
  - Delaware Center for Horticulture
  - Pennsylvania Horticultural Society
  - Local gardens
  - Local schools
Focus is the hands-on

• Field trips
• Laboratories
• Working alongside experienced staff
Botanical Gardens &
School of Horticulture
THE NEW YORK BOTANICAL GARDEN
School of Professional Horticulture

• Established in 1932
• Modeled after practical training programs at RBG-Kew and RBG-Edinburgh

The School of Professional Horticulture seeks to educate and train motivated individuals to become horticulturists of the highest caliber equipped to take on leadership positions in either the public or private sectors.
LICENSES & CERTIFICATIONS

NYSED Bureau of Proprietary School Supervision (1977)

ACCET (2005) – held to the highest standards

U.S. Department of Education - Title IV (2005)


NY State Department of Veterans Affairs (2007)

Visit www.nybg.org/edu/soph
@SoPH_NYBG
17 CURRENT STUDENTS

• Career changers
• 14 bachelors; 1 masters; 1 associates; 1 HS
• Age range: 22 - 58
• Average age: 30
• 5 International: Argentina, Italy, Korea, Nigeria
ACADEMIC PROGRAM

640 clock hours (or ¼ of program) in botany, horticulture, landscape design, communications & business management.

Visit www.nybg.org/edu/soph
@SoPH_NYBG
1st-Year Horticulture Rotations
4 rotations, each 200-hours @ 4 locations

Skills learned:
• transplant, propagate & produce crops
• manage glasshouse plants, collections, & exhibitions
• plant & maintain outdoor displays,
• care for trees, turf & shrubs.

Plant Health Care & Plant Records are part of each.

Visit www.nybg.org/edu/soph @SoPH_NYBG
Plant walks are designed to help students learn to identify the 1,000+ plants on their Master Plant List.

Visit www.nybg.org/edu/soph
@SoPH_NYBG
Field Trips

- Explore horticultural opportunities
- Meet practitioners in the field
- Learn how horticulture sites function
- Networking
Students learn the techniques and skills to collect, dry, press, mount and label museum-quality specimens over a 9-month period.
STUDENT GARDEN PLOTS

In their 1st year, students are assigned ~ 100 ft² plot and given instruction on how to design, install, maintain and dismantle a cool-season vegetable & flower garden.

“This is exactly why I came to the School”
C. Ruiz (Class 2016)
SECOND-YEAR LEARNING

Internships provide for specialized training that further expands & deepens a student’s horticultural & professional development skills.

Visit www.nybg.org/edu/soph
@SoPH_NYBG
Lectures & Symposia

Special lectures with international experts allow students to further expand their knowledge.

Subjects range from native plants, ecological design & restoration, urban farming, etc. - topics that enrich the students’ experience at NYBG.

Brian Huntley, Kirstenbosch
Jan. 2014

Visit www.nybg.org/edu/soph
@SoPH_NYBG
OUTREACH

• Local NYC high schools:
  - Urban Assembly School for Green Careers
  - Stephen T. Mather High School

• Serve as secretary on Metro Hort Board of Directors

• Green Industry Intern Field Day (Hortie Hoopla)

• NYBG’s Adult Ed program

• Veterans – M.O.V.A.

• Increase diversity

Visit www.nybg.org/edu/soph @SoPH_NYBG
To bring together interns in the green industries to discuss career opportunities, increase awareness of the need for educated and skilled horticulturists, and network with other interns.

*Horticulture Matters!*
GREEN INDUSTRY INTERNSHIP FIELD DAY

- Inspiring talks
- Career Info session
- Tours of NYBG gardens
- Plant ID contests
- BBQ – food, prizes, etc.
- Sponsor-supported

Visit www.nybg.org/edu/soph
@SoPH_NYBG
CHALLENGES

• Tuition - $7,500/year (£5,000)
• Cost of Attendance - $31,000/year (£21,000)
• No stipend
• No health insurance
• No housing - commutes range from ½ hr - 2 hrs each way
• NYC - tough and expensive place to live
BENEFITS

• Horticulture – expert staff teach students in the classroom & on the beautifully maintained grounds
• Library – largest in Western Hemisphere
• Herbarium – largest in Western Hemisphere
• Science – among top 3 in the world.
• Education – largest program in world
• Networking opportunities
• Title IV – Pell grants & Direct loans if qualified
• NYC – many want to study here.

Visit www.nybg.org/edu/soph
@SoPH_NYBG
SUCCESSES

• Career Opportunities:
  - Public gardens & parks – Dumbarton Oaks, BBG, Chicago BG, High Line, City Field Stadium
  - Private estates - Letterman’s, Bass, Rockefeller’s, Bruce Kovner, AZ Ice Tea, Martha’s and more
  - Landscape Design/Build
  - Self-employed

• More opportunities in the private sector (higher salaries)

• 100% placement past 5 years

• Graduates are well-prepared professionally.

Visit www.nybg.org/edu/soph
@SoPH_NYBG
Tim Hughes
Head of School of Horticulture

Royal Botanic Gardens, Kew
Richmond, Surrey TW9 3AB, UK
T  +44 (0)20 8332 5544
E  t.hughes@kew.org
@timhughes_
www.kew.org
Kew’s horticultural training programmes:
‘A horticultural passport to travel and work around the world’
RHS School of Horticulture
A century of hands-on gardening learning

Practical training at RHS Gardens

For more than 110 years, the RHS School of Horticulture training courses have been a way of providing students with the means of converting theoretical studies from the classroom into practice. Students become horticulturists who get their hands dirty, have excellent knowledge and are hugely respected within the horticultural industry.
To ensure our training meets the requirements of the horticultural sector…i.e. they are ‘Industry Ready’.

To ensure our students graduate with ‘professional standard’ practical skills and are at least and on the way to being proficient.

To ensure our students graduate with an academic understanding around the practical skill undertake.
Practical training programmes with an academic content.

What are the outcomes we want to achieve?

To give our students a good work ethic.

To provide a means for students to identify areas within the horticultural industry which they wish to develop further.
Practical training programmes with an academic core

What are the challenges we face in the delivery and management of this type of training programme?

Dealing with students who meet the entry requirements but come in with very different standards of horticultural knowledge/experience.

Making sure we keep up to date with the skills/knowledge that employers are looking for.

Ensuring an excellent standard, in delivery of horticultural training in both, practical and academic elements.

Achieving, as much as we can, some standardisation within the practical training elements.
Practical training programmes with an academic core

What are the challenges we face in the delivery and management of this type of training programme?

The vagaries of the weather and the seasonality of our industry.

Delivery of training programmes is a significant financial investment for all of us who provide salaried schemes.

Promotion and marketing - "there’s no point in applying"
Richard Barley, Director of Horticulture, at Kew recently said, “The applied practice of horticulture has never been more important, not only in terms of curation and development, but also for food security, environmental management and conservation of threatened species.”

On a positive note… what we do is important!
And finally......Horticulture can be fun!
Training and Education is REALLY needed!!!
Thank you

Tim Hughes
Head of School of Horticulture

Royal Botanic Gardens, Kew
Richmond, Surrey TW9 3AB, UK
T +44 (0)20 8332 5544
E t.hughes@kew.org
@timhughes_
www.kew.org
Developing a School of Horticulture
Value of Studying in a Botanic Garden
History
Internal needs
Capacity to host
Institutional commitment
Determine support
Cultivate support

Survey other gardens
Local need
Existing programs
Employment opportunities
Skills required by industry
SWOT analysis
Program design
Marketing strategy

Operating budget
Profit and loss
Depreciation
Start up costs

Decision to move ahead
Hiring Staff
Curriculum development
Lecturer lists
Accreditation

Four Phases of Planning
Internal ➔ Market study ➔ Financial Analysis ➔ Implementation
Focus areas of our work

- Quality of the Garden & Living Collections Development
- Collections management database
- Staff capacity MBG School of Horticulture
- Propagation and production

Missouri Botanical Garden
Results of our Market Research
<table>
<thead>
<tr>
<th>Source of Position Openings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Vacancy                               700</td>
</tr>
<tr>
<td>Retirement                            245</td>
</tr>
<tr>
<td>Resignation                           1,475</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Horticulture-Related Positions Available / Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horticulture Programs in US</td>
</tr>
<tr>
<td>Number of Students / Program / Year</td>
</tr>
<tr>
<td>Total Number of Students Majored in Horticulture</td>
</tr>
<tr>
<td>Number of Students in Gardening Related Concentration</td>
</tr>
<tr>
<td>Current Horticulture Graduates Work for Botanical Gardens after Graduation / Year</td>
</tr>
<tr>
<td>Number of Students Expected to Graduate from MOBOT Horticulture Program / Year</td>
</tr>
</tbody>
</table>
The Job Market for Horticulturalists

- 68% Botanical Gardens plan to expand
- 76% Botanical Gardens plan to recruit more horticulture staff
- 75% Botanical Gardens expect an increasing demand for horticulture staff with qualifications
Degrees Preferred by Employers

- 2 years Diploma
- Bachelor Degree
- Master Degree
- Doctorate Degree
• **70%** of respondents found it difficult to recruit qualified staff

• **92%** welcomed an accredited MOBOT program
  - Combination of practical experience and academic knowledge of public horticulture
  - Larger pool of potential employees (Midwest)
  - Improvement of industry standards
  - MBG Reputation
  - Accredited program
Results of Our Program Startup Accounting

Net Income (Loss)

- 4yr model
- 2+2 model
- University
- 2 yr non-accreditation
Implementation Phase (where we are today)

- Institutional decision to move ahead
- Hiring a Principal for the School
- Finalizing Development of Curriculum
- In-house and external lecturers lists
- Negotiations with University Partner
- Predicted First enrolment of students 2017