

ASLA PHL2018

SAT-A09 Planting Design and Dynamic Stewardship Strategies for Resilient Cities

Session Guide

Presented by:

Laura Hansplant, ASLA, Principal & Director of Design, Roofmeadow LHansplant@roofmeadow.com
Claudia West, International ASLA, Principal, Phyto Studio Claudia@phytostudio.com
Uli Lorimer, Curator of Native Flora, Brooklyn Botanic Garden Ulilorimer@bbg.org

Learning Outcomes:

1. Understand why conventional landscape design and horticultural planting approaches lead to vulnerability in plant performance and long-term viability.
2. Learn how alternative design and planting approaches based on plant function and community relationships lead to greater resilience, function, and beauty.
3. Explore the implications for the planting design process, including procurement, establishment, and stewardship.
4. Explore successful urban and green roof projects based on alternative planting and stewardship strategies and be inspired to use these strategies in your upcoming projects.

Synopsis:

1. The vulnerability and limitations of conventional planting approaches

We live in a post-wild world, where most of us live in cities and nature no longer exists apart from us. Thriving urban nature is essential to keep us healthy and balance the effects we have on the planet.

Current planting methods are no longer good enough. The problem:

- Failure to quickly and densely cover ground
- Use of inappropriate plant palette
- Outdated installation techniques
- Outdated planting management techniques
- Failure to understand urban environments

Green roofs and similar elevated landscapes offer unique and complementary opportunities to ground level landscapes. Case studies are presented here as focused pilot projects for a larger exploration.

- Ironically, intentional (designed) plantings 'pay up' for native plants on green roofs
- Volunteer native species, in contrast, are able to colonize more extreme settings.
Potential factors include: companion planting / functional relationships between sedum

and grasses/forbs; wider genetic diversity; plants from seed are better able to exploit micro variations in edaphic conditions.

- Green roofs as distinct habitat 'types', characterized by extreme thermal variation, rapidly drained, lean, high pH soils; young soil microbiology; early successional plant assemblages
- Most influential factors (for green roofs): shelter, moisture availability; plant source (genetics); ability of plants to reproduce; maintenance (disturbance) and control of annual weeds.

Observations from nature don't always translate into the garden:

- Nature provides a wealth of information and inspiration to the designer, go take a hike!
- Soil conditions, competition, disturbance and dispersal mechanisms create a complex framework in nature
- Without those limits, plants may behave differently in cultivation

2. Building resilience and natural function into planting design

Successful planting design strategies

- Relate plants to people (distill and amplify visually dominant plants, elevate emotional content, reconnect people with the nature by evoking wild landscapes, orderly frames around naturalistic planting)
- Relate plants to place (site constraints are assets)
- Relate plants to other plants (vertically layer compatible species, fill numerous spatial and temporal niches)
- Flexibility in design concept as it relates to succession and management

Case Study: Jackson National Headquarters

- 6" media, irrigated
- Layered approach to planting design: sedum as a companion ground-layer plant
- 'Tapestry' approaches to diversity
- Neat frame

Planting stewardship concepts

- Extended planting schedules (3, 5, 10 years out)
- A good way to build species diversity
- The need for better ecological information from nurseries and catalogs

Case Study: Rooftop urban habitat pilot project at Krishna Center for Nanotechnology

- 4" media, unirrigated, sheltered.
- Companion planting approach to increasing stress tolerance: using sedum as a cover crop
- Supplemental seeding as a means to species diversity and ecotype selection
- Development of meadow structure over time (5 years +)

3. Lessons learned and practical challenges: Implications for the planting design process

- The benefits and challenges of wild sourcing materials
- Seed vs plugs
- Using annuals
- The role of botanic gardens in expanding the plant palette
- Implications for plant conservation
- Plant selections based on tolerance of urban conditions

Case Study: Green roof terrace at Krishna Center for Nanotechnology

Unexpected species volunteers: surprises and philosophical choices

- 6" to 30" media, irrigated, sheltered
- Seed sources from overseeding, soil in container plants (nursery soil), adjacent sites
- Balancing resilient volunteers and stewardship imperatives with cultural aesthetics
- Challenges of species ID during stewardship: consider prioritizing the identification of 'least wanted' weeds.

Stewardship & Maintenance: working dynamically with plant community development

- Observe and document frequently
- Be flexible and allow the plants to tell you about site conditions
- Plan for change and embrace patience

Recommended Walks and Reference Sites in the Philadelphia region:

Natural Areas:

- Houston Meadow, Wissahickon Park, Philadelphia. Trailheads are located at Wissahickon Ave and Cathedral Road, behind Courtesy Stable and Houston Playground. *Remnant native meadow.*
- Franklin Parker Preserve, Chatsworth, NJ. *Heart of the Pine Barrens, succession in action*
- Nottingham Serpentine Barrens Preserve, Nottingham, PA. *Serpentine grassland communities.*
- Pink Hill at Tyler Arboretum, Media, PA *Serpentine barrens and grasslands*
- White Lake Natural Resource Area, Warren County, NJ *Limestone plant communities*

Curated Habitat Displays:

- Bowman's Hill Wildflower Preserve *special habitat areas include meadow, woodland, wetland and limestone habitats*
- Brooklyn Botanical Garden *Native Flora Garden with plant communities from three ecoregions; Visitor Center with native meadow vegetated roof*
- Longwood Gardens *Meadow Garden, including dry and wet meadows*
- Morris Arboretum *Horticultural Center includes a native meadow and green roof emphasizing native species; visits and tours by prior arrangement.*
- Mt Cuba Center *Living collections include native meadow, woodland, wetland, and outcrop habitats*
- New York Botanical Garden *Native Plant Garden (meadow) and the Thain Family Forest (old growth forest)*

Publically accessible green roofs in Philadelphia:

- Cira Green elevated park *Native and adaptive plants, with ongoing plant reproduction*
- PECO green roof *Public tours by appointment. Native plant colonization of extensive roof*

Recommended Reading:

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