Grow Zone

Function over form in urban riparian restoration

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Urban Stream Syndrome (Walsh et al. 2005)

- Flashier hydrograph
- Elevated concentrations of nutrients and contaminants
- Altered channel morphology
- Compromised bank stability
- Nonpoint source pollution
- Disconnected floodplains
Focusing on riparian buffers

- Water quantity
- Water quality
- Soil erosion
- Nutrient cycling
- Ecosystem services
Willowbrook Reach (1997)
Willowbrook Reach (2010)
Ecological restoration through facilitated succession

- No Mow Zone (eliminate main disturbance)
- Seed bank
- Woody recruitment
- Soil erosion and compaction
- Invasive species control
Outreach

- Educating staff
- Local stakeholders
- Workdays
- Educational materials
- Creek Walks/Talks
- Signs
- Guides
Outreach
Management Template

• Guiding principles

• Environmental criteria
  – Canopy
  – Moisture
  – Slope

• Four management axis
  – Seeding
  – Seedling planting
  – Soil amendments
  – Invasive species control
Financial Benefits

• Cost ~$25 ft$^{-1}$ (~$850 ft$^{-1}$ engineered bank restoration, $6800$ per acre (max.))
  – Small scale
  – Reduce future degradation requiring engineered solutions

• ~$80$ acres (2012, 21 Grow Zones) removed from mowing ($48K$ yr$^{-1}$)

• Key bacteria TMDL solution (avoid ~$25K$ day$^{-1}$ in fines).
Other Benefits

• Healthy and calming natural spaces
• Shade for recreation
• Education
• Promote diversity and stewardship
• Contribute to carbon neutrality
Restoration Challenges

- Severe soil erosion/compaction
- Low plant establishment in harsh soils
- Compliance with No Mow zone
- Citizen concerns
Future directions

• More Grow Zones!

• Restoration management templates and schedule (volunteers, stakeholders).

• Establish local functional trait monitoring component to insure resilience.

• Ongoing research...
We are getting there...

Givens

Robert E. Lee

Bartholomew
Questions?