Re-envisioning Bio-Diversity: Integrating Pollinator Habitat into Existing Urban and Rural Frameworks

New Partners for Smart Growth Conference
Portland, OR
February 11, 2016
2014 ASLA Professional Awards Winner
Hunter's Point South Waterfront Park – Queens, NY
Firm: Thomas Balsley Association, and Weiss/Manfredi
MISSION

Landscape architects lead the stewardship, planning, and design of our built and natural environment.

The Society’s mission is to advance landscape architecture through advocacy, communication, education, and fellowship.

VISION

Leading the design and stewardship of land and communities.

Re-envisioning Bio-Diversity: Integrating Pollinator Habitat into Existing Urban and Rural Frameworks
AGENDA

• Highlight pollination issues and propose a treatment to the problem as it relates to planning and landscape architecture

• To encourage landscape architects to be involved in local and national policy making

• Showcase the importance of forging political partnerships to encourage ecological design

• Educate the professional community on advances and partnerships within the landscape architecture community
POLLINATORS AND THEIR PURPOSE

Importance of Pollinators

Insects, Birds, and Mammals Pollinate:

- 80% or 300,000 out of 352,000 flowering plants on earth
- 33% of Food Crops
  - ex. berries, melons, tomatoes
HONEY BEE

1 domesticated sp. in North America
Highly social
Nest in managed hives
Perennial colony

NATIVE BEES

4000 spp. in North America
Majority (90%) solitary
Nest in the ground or cavities
Annual life cycle
POLLINATORS AND THEIR PURPOSE
Commercialization Effects on Honey Bee Health

HONEY BEE PROBLEMS
- Varroa Parasite
- Viruses
- Pathogen Transmission

ENVIRONMENTAL PROBLEMS
- Insecticides
- Herbicides Fungicides
- Flowerless Landscape

Diverse Forage
Nutrition

Graphic: Dr. Marla Spivak, UMN Bee Lab
NATIVE BEES - The ‘At Risk’ Bees

Four bumble bee species have declined 96% (last 20 yrs)\(^1\)

One bumble bee species is believed to be already extinct\(^2\)

50% of Midwestern native bee species have disappeared from their historic ranges (last 100 yrs)\(^1\)

---

2. The Xerces Society for Invertebrate Conservation Red List of Bees
POLLINATORS AND THEIR PURPOSE
Factors Affecting Native Bee Populations

- Fragmented Habitat
- Insecticides
- Nest Site Disturbance
- Other Pesticides
- Pest and Pathogen Transmission
- Flowerless Landscape

Diverse Forage
Adequate Nesting Sites

Graphic: Dr. Marla Spivak, UMN Bee Lab
Native bees make a significant contribution to the pollination of many food crops in combination with honey bees or as a stand alone force.

Curcubits:
Melon, squash, pumpkin

Berries: Blueberry, cranberry, strawberry, raspberry

Solanaceous Crops:
Tomato, pepper, eggplant
NATIVE BEE CHALLENGES - Nest Disturbance

70% native bees nest in the ground

One year life cycle

Impacts:
Soil compaction
Tilling
Flooding
Pesticides
Land Use Changes
NATIVE BEE CHALLENGES
Absence of Nesting Sites

30% native bees nest in cavities
Standing dead trees
Rotting wood
on the ground
Plant stems
(from the previous season’s growth)
BEE CHALLENGES - Flowerless Landscapes

Most Anthropocene landscapes lack an adequate amount of forage and nesting sites for native bees.

Commercial landscapes  Residential landscapes
BEE CHALLENGES - Distribution of Habitat

Bees cannot forage, nest, or travel through a fragmented landscape lacking flowers.

Native bees are limited by how far they can fly:
Small species ~ 200 yards      Large species ~ 1 mile
BEE SOLUTIONS
Convert Unused or Underutilized Landscapes

Diversify existing habitat
Connect or expand habitat fragments
power right-of-ways
riparian corridors
golf courses
city-owned vacant lots
highways

Photo: Marla Spivak
Photo: Baltimore Gas & Electric

American Society of Landscape Architects
Dwane Jones, Ph.D.
Director of the Center for Sustainable Development

College of Agriculture, Urban Sustainability, and Environmental Sciences (CAUSES)
Washington, DC

The Center for Sustainable Development provides relevant and innovative applied research and education to students, District residents, and the world in the areas of sustainable infrastructure, sustainable spaces, urban economics and entrepreneurship, and behavioral and social change.
The Center for Sustainable Development
Land-Grant Centers & Academic Programs in CAUSES

Academic Programs

- Architecture & Community Planning + Master’s
- Nutrition & Dietetics + Master’s
- Environmental Studies
- Health Education
- Nursing
- PSM-Water Resources Management
- PSM-Urban Sustainability*
- PSM-Urban Ag*

* Proposed launch: Spring 2016
CAUSES Urban Food Systems (Hubs) Model

Source
- Aquaponics: fish and produce
- Muirkirk Farm
- Community Partners
- Vendors

Prepare
- Business Kitchen Incubation Space
- Food Truck

Distribute
- Food Truck
- Farmers Markets
- Retail

Green Resources
- Compost Facility at Muirkirk
- Anaerobic Digestor

Training Opportunities
- Entrepreneurship
- Communications/Marketing
- Business Planning and Management
- Food Preparation
- Policies and Legal Processes
- Economic Analyses
- Environmental Impacts
- Maintenance and Management
- Technical Assistance
- Healthy foods/minimize fishing from Anacostia

udc.edu/causes

“Healthy Cities-Healthy People”
dwane.jones@udc.edu

Jones & O’Hara © 2013
The green roof installation and renovation of the greenhouse on Building 44 will create a living laboratory in support of the College of Agriculture, Urban Sustainability, and Environmental Sciences (CAUSES). The project will add approximately 20,000 sq ft of green space and will feature water re-use irrigation systems and garden planters for urban agricultural research and demonstration.

*Contractor:* **CONSYS Inc.**  *Architect:* **BELL Architects**

**Project Start:** March 2014  
**Completion Date:** May 2015
Urban Agriculture

udc.edu/causes

“Healthy Cities-Healthy People”

dwayne.jones@udc.edu
Aquaponics

udc.edu/causes

“Healthy Cities-Healthy People”

dwane.jones@udc.edu
Specialty/Niche Crops: “Urban” Environment

Garden Egg
(Solanum aethiopicum)

Garden Egg is also known as African eggplant, molok tomato, eggplant or mirange główna. The leaves are eaten as a leaf vegetable and are more nutritious than the fruit. The fruit of the plant is eaten both raw and cooked. Garden egg is one of the most important vegetable crops grown in West Africa, especially in Ghana.

udc.edu/causes  “Healthy Cities-Healthy People”  dwane.jones@udc.edu
East Capitol Urban Farm (pre-development)

udc.edu/cause

“Healthy Cities-Healthy People”

dwane.jones@udc.edu
Site Elements

Site Elements—
Raised Beds
Market
Aquaponics
Food truck
Hoop Houses
Green Infrastructure
Natural playspace
Pollinator and raingardens
Master Site Plan (constructed Fall 2015)

Leaf Concept

(Detailed descriptions of each zone follow in the next slides)
Plaza
Public Art
Nature Discovery
Community Gardens
Aquaponics
UDC Farm
Bioretention
Market Place
Theme Gardens
The End – and The Beginning!
Current:

Proposed:
NATIVE BEES

SAFETY

EFFICIENCY

COST
NESTING HABITS
FORAGING HABITS
BODY SIZE
Nesting Habits

Foraging Habits

Body Size

[Site Design]

[Distribution]
SITE DESIGN

NESTING: 75% GROUND : 25% WOOD

FORAGING: VARIETY OF YEAR-ROUND FOOD
15-18 FT² AREA

COMPOSITION: 20% NESTING : 80% FORAGING
DOWNTOWN HOUSTON
DOWNTOWN HOUSTON

Nesting (20%)
DOWNTOWN HOUSTON

Foraging (80%)
DOWNTOWN HOUSTON
PROPOSED Parking Lot
DOWNTOWN HOUSTON

Parks | Public Green Space

Vacant Lot
DOWNTOWN HOUSTON

X-Large Native Bees (900 m)

Species Represented:

12%
DOWNTOWN HOUSTON

Large Native Bees (700 m)
DOWNTOWN HOUSTON

Parks | Public Green Space
Vacant Lot
Parking Lots
DOWNTOWN HOUSTON

Large Native Bees (700 m)

Species Represented: 36%
DOWNTOWN HOUSTON

Medium Native Bees (550 m)

Species Represented:

66%
DOWNTOWN HOUSTON

Small Native Bees (450 m)

Species Represented: 87%
DOWNTOWN HOUSTON

X-Small
Native
Bees
(250 m)

Species Represented:
100%
DOWNTOWN HOUSTON

CURRENT Light Rail Corridor
DOWNTOWN HOUSTON
PROPOSED Light Rail Corridor
FEDERAL | STATE GRANTS

LEED | SITES

WILDLIFE CORRIDOR HABITAT
Fixing America’s Surface Transportation (FAST) Act

2012 ASLA Professional Award Winner
Powell Street Promenade – San Francisco, CA
Firm: Hood Design
ASLA ADVOCACY TOOLS

Photo: Complete Street Project
Charles Street – Baltimore, MD
Tweet your Legislators to Continue Active Transportation Projects

MAP-21 expires in September 2014. NOW is a good time to tell your legislators that active transportation programs should continue to be included!

TWEET CONGRESS

Welcome to the New ASLA Advocacy Network

Advocacy News
President Obama Sends Congress First Transportation Bill - Aligns with Many ASLA Priorities

Authorize GET_ENGAGE(D) to use your account?

This application will be able to:
- Read Tweets from your timeline.
- See who you follow, and follow new people.
- Update your profile.
- Post Tweets for you.

Username or email
Password

Remember me • Forgot password?

This application will not be able to:
- Access your direct messages.
- See your Twitter password.

Sign in • Cancel

Before you take action, we need to learn more about you:

- First name
- Last name
- Address Line 1
- Address Line 2
- City
- State
- ZIP Code
- Email Address

Remember Me

Submit
Join iAdvocate Network:
www.advocate.asla.org
ASLA Advocacy serves as the voice of Landscape Architecture in promoting the legislative and political interests of our members and the profession. #iAdvocate

Washington, D.C
asl.org/advocacy

Tweets 80
FOLLOWING 155
FOLLOWERS 86
FAVORITES 94
LISTS 1

Tweets

ASLA Advocacy @ASLA_Advocacy 2h
A great read to get your #waterweek15 started.

landscape architects @landarchitects
How to Save Water, the Californian Way (via The Dirt) bit.ly/1GTazuw

ASLA Advocacy @ASLA_Advocacy 4h
Special thanks to our advocacy partners @APAAadvocates @AmericanForests & @bureauofreclamation with our Advocacy Grand Tour of Capitol Hill:

Trends

Popular accounts - Find friends
Follow Us: @ASLA_Advocacy
Questions
Contact Information

Danielle Bilot, Associate ASLA – dmbilot@gmail.com
Mark Cason – mcason@asla.org
Heather Holm – holm.heath@gmail.com
Dwane Jones, Ph.D. – dwane.jones@udc.edu

2011 ASLA Professional Awards Winner
Portland Mall Revitalization – Portland, OR
Firm: ZGF Architects, LLP