

Planting design for green space connectivity in support urban ecosystem function and aesthetics



Dr. MaryCarol Hunter, School of Natural Resources & Environment, Landscape Architecture Program,
University of Michigan, Ann Arbor MI USA



Improve green connectivity in urban areas to address problems of landscape fragmentation and habitat Loss

When principles of ecological planting design are applied to the development of connected urban habitat, sustainability is greatly enhanced by improving:



Human mental wellbeing

Biodiversity

***** Pollinators**

Water Quality

Air Quality

Carbon sequestration

Climate change adaptation

Pollinator decline due to disease, pesticides, habitat loss and fragmentation



Habitat loss and fragmentation are important in pollinator decline in systems where little natural habitat remains - characteristic of the UK and Netherlands and parts of the US.

Winfree et al 2009. A meta-analysis of bees' response to anthropogenic disturbance. Ecology 90(8): 2068-2076

Growing green connectivity in urban areas: Challenges and Successes

Policy

Political will

Culture

Land availability



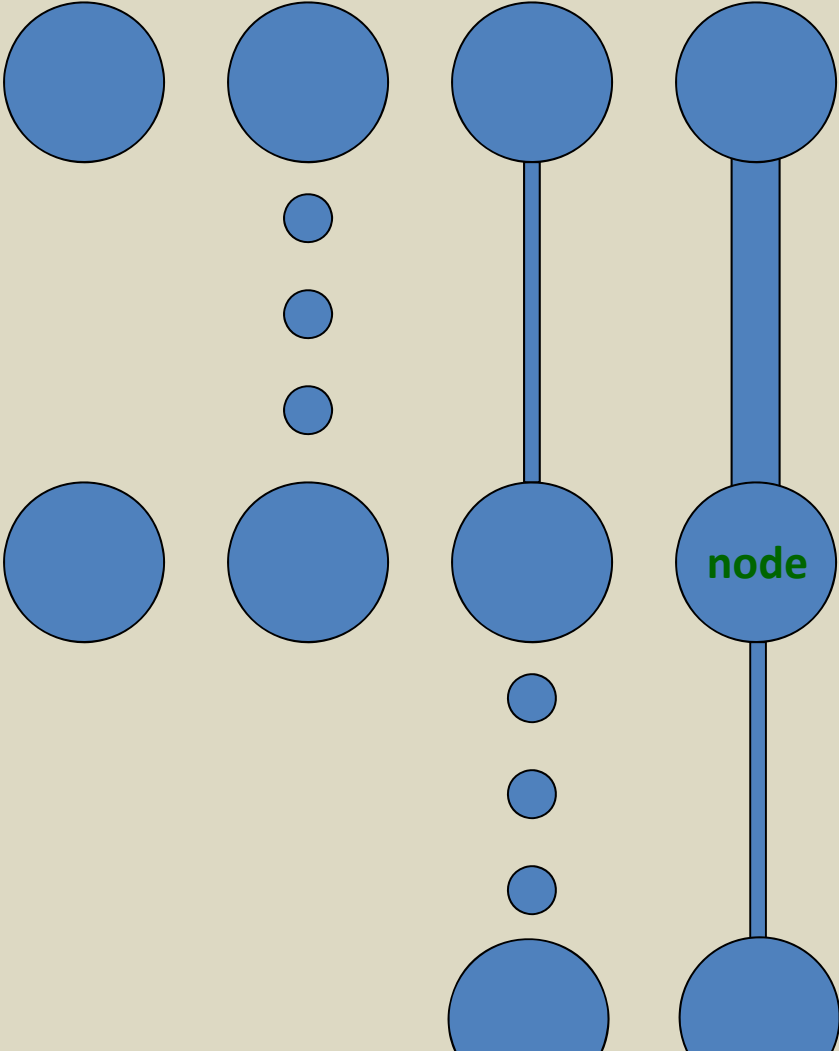
Sources of support: government initiated (top-down)

citizen initiated (bottom up)

Role of ecological planting design

Building connectivity in urban ecosystems

PATCHES + CORRIDORS in an URBAN MATRIX



URBAN PATCHES

SMALL PATCHES



elevated Patch



Midtown Sky Garden – on the 17th floor, this green roof terrace offers contemporary habitat patch in Manhattan

It has a “...multi-seasonal plant palette tolerant of extreme growing conditions. The elongated meadow design incorporates drought tolerant grasses, perennials and spring bulbs punctuated by flowering trees in structurally specific locations. The office interior links with the exterior via a series of wooden platforms embedded in the landscape creating flexible “break-out” meeting spaces and places of respite.”

HM White

elegant Patch



During the late Spring and early Summer, a "river" of purple salvia runs through the Light Plate. (Photo: Gustafson Guthrie Nichol Ltd)



a Patch that needs to be connected



UNION SQUARE NORTH
New York, NY (2003–2009)
Michael Van Valkenburg
Associates, Inc



URBAN CORRIDORS

Neighborhood Corridors





Roadside Corridors

Mosholu Parkway, Bronx NY

This upgrade included bio-filtration areas that function like sponges in the unused parts of the road's shoulder. They perform a critical maintenance function while providing habitat for various species.

HM White Site Architects

Highway Habitat Restoration with native plants



Haan, N.L., M.C. R. Hunter, and M.D. Hunter. 2012. Investigating Predictors of Plant Establishment During Roadside Restoration. *Restoration Ecology* 20(3) 315-321.

Regional Corridors



The Chicago Wilderness Region

Legend

- Chicago Wilderness Region
- Public Open Space
- Recommended Resource Protection Areas
- Major Rivers
- Counties
- States
- Lake Michigan

© Chicago Metropolitan Agency for Planning

Green infrastructure
(connectivity) map for
metropolitan Chicago

NODE: a PATCH – CORRIDOR INTERSECTION



Brooklyn Botanical Garden's Visitor Center green roof brings a native meadow experience to the pedestrian corridor.

Landscape architect:
HM White Site Architecture;
Weiss/Manfredi Architects

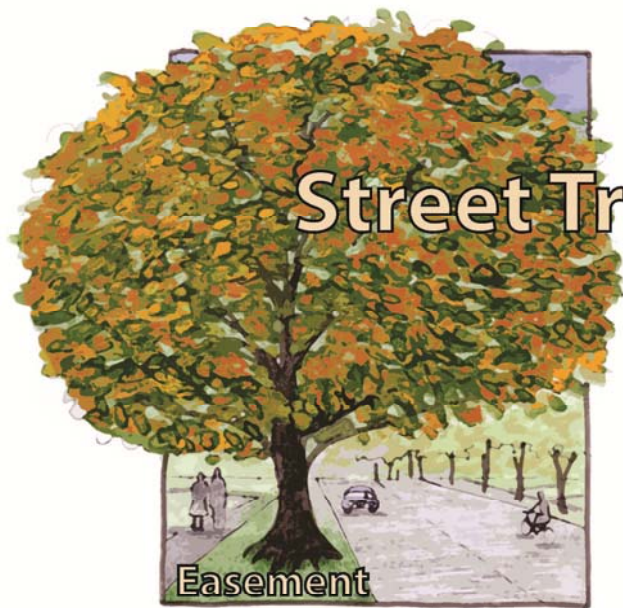




Supporting sustainability with strong green corridor development

*Trees are the lungs of the city.
When systematically laid out, trees structure spaces and
calm the inherent urban visual chaos of their surroundings.*

Street trees in support of urban forest corridors



Street Trees...

Has your
questionnaire
arrived yet?



Hunter, M.C. 2011a. Impact of ecological disturbance on awareness of urban nature and sense of environmental stewardship in residential neighborhoods. *Landscape and Urban Planning* 101:131-138.



**FUND AN
NYC
TREE**

Select a Contribution Amount

\$100

Helps plant a small caliper tree that can sequester around 2 pounds of carbon a year.

\$250

Helps plant a medium caliper tree which, at maturity, captures 1,524 gallons of storm water a year.

\$500

Helps plant a large caliper tree, or 5 small caliper trees, which can help decrease utility bills.

Gardens for Biodiversity and Resilience



Hunter, M.C. 2011b. Using ecological theory to guide urban planting design: An adaption strategy for climate change. *Landscape Journal* 30(2): 173-193.



Designing for Insect Conservation (with a focus on pollinators)



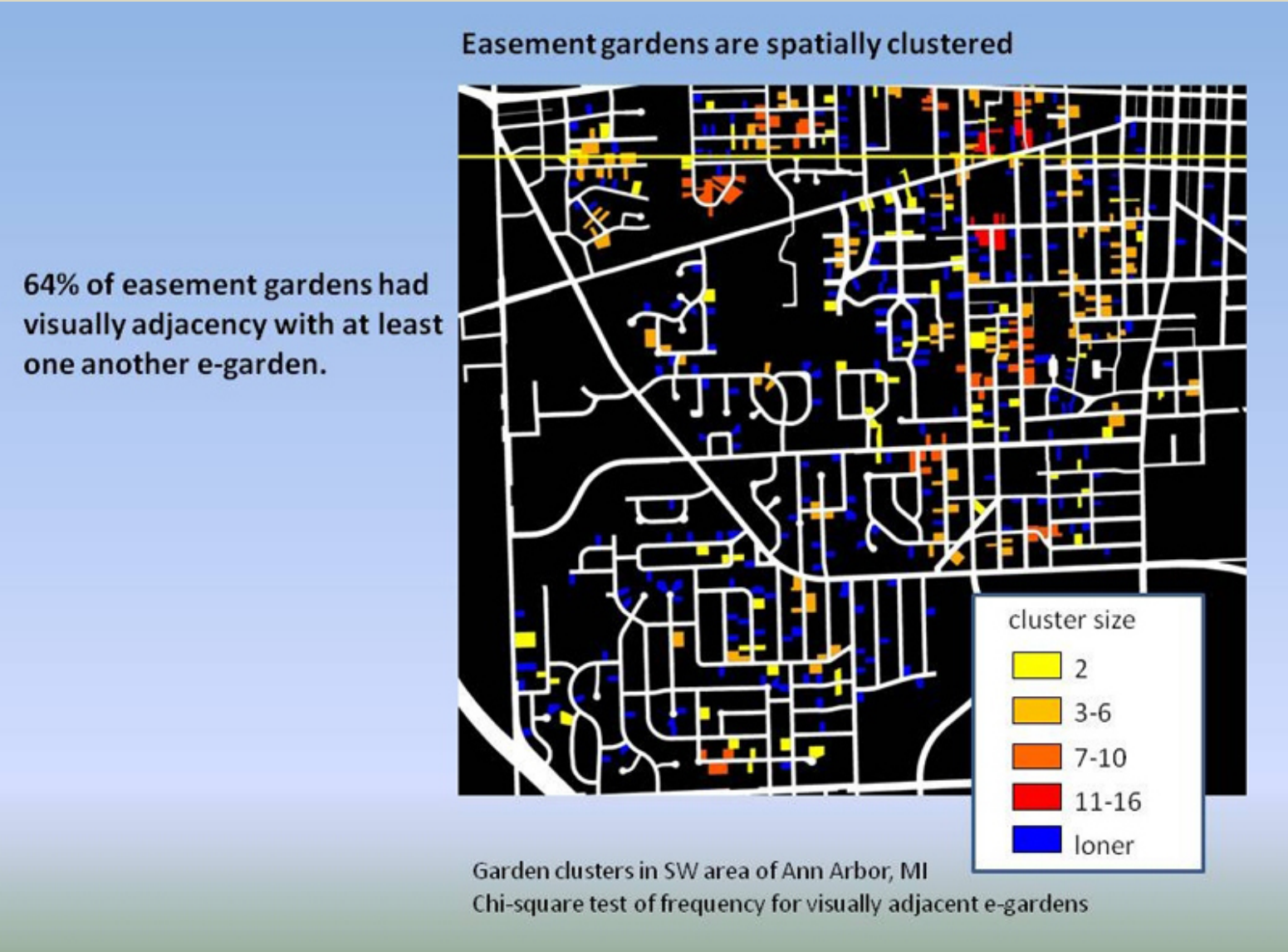
Hunter, M.C. and Hunter, M.D. 2008. Designing for conservation of insects in the built environment. *Insect Conservation and Diversity*. 1(4): 189-196.





bottom up forces can produce vital urban connectivity

Citizen action: Spatial Contagion of Easement Gardens



Hunter, M.C. and D.G. Brown. 2012. Spatial contagion: Gardening along the street in residential neighborhoods. *Landscape and Urban Planning*. 105:407-416.

Community organization:

**The High Line
an elevated urban linear park**



Procedural Rules of Ecological Planting Design

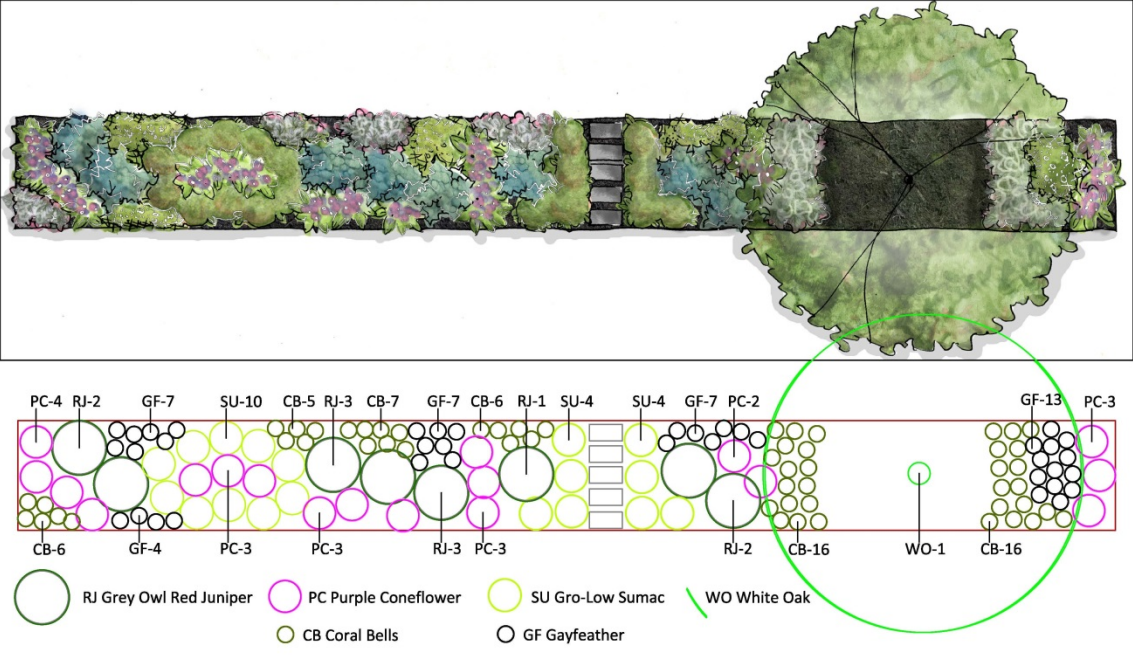
Create from a platform of knowledge about the nature of ecological function & ecosystem services.

Understand the site

Help the client set ecologically functional goals

Begin the design with a focus on aesthetics and sense of place (rather than the plants)

Select plants to achieve aesthetic & ecosystem service goals and to match microhabitat.





Using sculptural form as
aesthetic design premise

Lurie Garden, Chicago: The Light Plate's perennial plantings glow in warm autumnal light. In the distance, the Armature provides a simple and permanent clipping guide for precisely maintaining the sculpted profile of the mature hedge. *(Photo: Mark Tomaras)*

*Attend to aesthetics and sense of place in design
and ecological requirements during plant selection.*



*Millenium Park, Chicago
The Light Plate at dusk during the Summer.
Photo: Gustafson Guthrie Nichol Ltd*



***For more information on ecological planting
design see my website for Public Education:
<http://natureforcities.snre.umich.edu/>***