Ecosystem Services and the Quest for Sustainable Cities

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Acknowledgments:

- EcoMetrix Solutions Group
- Autopoiesis LLC
- Ecotrust
- The Bullitt Foundation
Agenda

- Urban Ecosystem Services
- Using Ecosystem Services to Understand Sustainability
- The Bullitt Center Example
- Questions
The ecosystem services paradigm . . .

Natural

Man-Made

. . . A false dichotomy . . .
... urban reality ...
Ecosystem Services in an Urban Context

- Natural Area
- Restored Natural Area
- Mimicking Natural Systems
- Modified Natural (Green BMPs)
- Man-Made
water
water

17%
50%
.2%
49.8%
0%
83%

URBAN
Ecosystem Services in an Urban Context

Intensity of Functional Performance

Co-Benefits

Natural Area
Restored Natural Area
Mimicking Natural Systems
Modified Natural (Green BMPs)
Man-Made Technology
Why are we using ecosystem services in an urban context?
What would a graduated approach tell us about urban planning?
Ecosystem Services in an Urban Context

Intensity of Functional Performance

- Natural Area Restored
- Natural Area Mimicking Natural Systems
- Modified Natural (Green BMPs)
- Non-Integrated Technology

Community Resilience

Increased Resilience
Decreased Resilience

Co-Benefits

Human Health and Welfare
Increased Health
Decreased Health

Potential Externalities beyond Urban Area

Decreased Externalities
Increased Externalities

Lower Density
Potential Density of Human Habitation (potential regional carrying capacity)
Greater Density
Our Available Space is Finite . . .
COMPONENT SETTINGS FOR DECEMBER 2012

One birth every................................. 8 seconds
One death every.................................. 12 seconds
One international migrant (net) every.............. 46 seconds
Net gain of one person every....................... 15 seconds

U.S. - 314,919,948
World – 7,057,807,946
COMPONENT SETTINGS FOR MARCH 2008

One birth every.................................. 7 seconds
One death every.................................. 11 seconds
One international migrant (net) every............. 30 seconds
Net gain of one person every........................ 13 seconds

303,666,035 – (314,919,948)
- 7,057,807,946
- 45,000,000 square miles
- ~ 11,250,000 square miles
- 640 acres/square mile,
  - 28,800,000,000 acres of exposed land surface
  - ~7,200,000,000 acres of arable land
Given these numbers, there are currently just over 1 acre/person of usable land surface.

*(expected to decrease to .8 by 2050)*
Striking the balance?

What a Living Building can tell us about the role of urban areas in the quest for sustainability
water

50%

49.8%

.2%
Framework currently being refined to help understand the ecosystem service benefits provided by the Bullitt Center

- Water
- Human Health
- Climate regulation

Over multiple spatial and temporal scales
Thank you for your time