Green Cities for Health and Delight
nature in placemaking

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Placemaking :: Love Where You Live
Hosted by Trees Forever
December 2014 :: Cedar Rapids, Iowa
overview

environmental services
health benefits & services evidence
‘cradle to grave’
economic implications
delight! for placemaking
urban forest benefits
in the background of today’s busyness
Health & Well Being
Community Trees & Forests
evidence about the importance of ‘nearby nature’
environmental benefits
# Ecosystem Services

## Millennium Ecosystem Assessment

### 2005

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<th>Supporting Services</th>
<th>Ecosystem Services</th>
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<td>Nutrient cycling</td>
<td>Provisioning Services</td>
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<td>Soil formation</td>
<td>Food (crops, livestock, wild foods, etc...)</td>
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<td>Primary production</td>
<td>Fiber (timber, cotton/hemp/silk, wood fuel)</td>
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<td>Genetic resources</td>
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<td>Fresh water</td>
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<td>Regulating Services</td>
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<td>Air quality regulation</td>
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<td>Climate regulation (global, regional, and local)</td>
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<td>Water regulation</td>
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<td>Cultural Services</td>
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<td>Aesthetic values</td>
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<td>Recreation and ecosystemism</td>
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measure the canopy of a city
STRUCTURE

FUNCTION

VALUE

MANAGEMENT

Eco (UFORE)
Streets (STRATUM)
Hydro
Vue
tools provided by USDA
Forest Service

photo credits: Seattle i-Tree Training by Al Zelaya
Improving Air Quality

Image courtesy of the Center for Urban Forest Research
Reducing Stormwater Runoff

Image courtesy of the Center for Urban Forest Research
Stormwater Management

Pierce County WA, Chambers Creek Properties
Pierce County WA, Chambers Creek Properties - 4 year growth
stormwater management

Parks & People Foundation, Baltimore
neighborhood social cohesion

environmental education & social learning
human health & well being benefits
Urban Forests and Newborns

the natural environment may affect pregnancy outcomes . . .

10% increase in tree-canopy cover within 50m of a house
= lower number of low weight births (1.42 per 1000 births)

*Donovan et al.*, *Health & Place* 2011; *Hystad et al.*, *Env Health Perspectives* 2014
School & Learning
Green High School Campuses

- cafeteria & classroom window views with greater quantities of trees and shrubs

positively associated with:
  - standardized test scores,
  - graduation rates
  - %s of students planning to attend a four-year college
  - fewer occurrences of criminal behavior

Matsuoka. 2010. Landscape & Urban Planning
College students with more natural views from their dorm windows
- scored higher on tests of capacity to direct attention
- rated themselves as able to function more effectively

Tenessen & Cimprich. 1995. Journal of Environmental Psychology
Trees & Crime Reduction

- trees in the public right of way are associated with lower crime rates
  - smaller, view-obstructing trees are associated with increased crime
  - larger trees are associated with reduced crime

Donovan & Prestemon. 2012. *Environment and Behavior*
EAB Tree Loss & Public Health

1990 to 2007, 1,296 counties in 15 states infected areas vs. no bugs
15,000 more deaths from cardiovascular disease
6,000 more deaths from lower respiratory disease
controlled for demographic, human mortality, and forest health data at the county level

Toledo, Ohio in 2006, pre EAB

2009, EAB in neighborhood

photos: Dan Herms, Ohio State University
Shinrin-yoku  Forest Bathing

- extended forest walks
- reduced ‘fight or flight’ nervous system activity
- lower cortisol – a stress indicator
- increased immune function
- lower pulse rate & blood pressure
Physical Activity & Depression Reduction

- Review of 13 high quality studies
  - exercise recommended for mild to moderate depression
  - people who are willing & motivated
  - associated meditation and mindfulness are important

hospital healing gardens: patients; family and friends; professional staff

health care $$ savings
Effects of nature window view on recovery from surgery (Roger Ulrich, 1984)

- Shorter stays
- Less pain
- Fewer minor complications
- Better emotional well-being
Legacy Good Samaritan Medical Center
Stenzel Healing Garden 1997
Rehabilitation Institute of Oregon
Hospital Staff – Respite and Support
Elders: mobility & social connections
how do we know?
research evidence!
Research Review and Summaries
www.greenhealth.washington.edu

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University of Washington
NGO partners

thanks!
to U of WA students:
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Mary Ann Rozance
Sarah Krueger
Local Economics

Trees in cities are not grown and managed for products that can be bought and sold on markets, but they do provide many intangible services and functions! This article serves two purposes. First, it introduces valuation methods that are used to convert intangible benefits to dollar sums.\textsuperscript{1,2} Then, it shows how nonmarket valuations can support local decision-making.

Fast Facts

- The presence of larger trees in yards and as street trees can add from 3\% to 15\% to home values throughout neighborhoods.
- Averaging the market effect of street trees on all house values across Portland, Oregon yields a total value of $1.35$ billion, potentially increasing annual property tax revenues $15.3$ million.\textsuperscript{9}
- A study found 7\% higher rental rates for commercial offices having high quality landscapes.\textsuperscript{14}
- Shoppers claim that they will spend 9\% to 12\% more for goods and services in central business districts having high quality tree canopy.\textsuperscript{34}
- Shoppers indicate that they will travel greater distance and a longer time to visit a district having high quality trees, and spend more time there once they arrive.\textsuperscript{34}
Metro Nature & Health Evidence Framework
what about delight?

nature for placemaking & quality of life
placemakers :: parks & trees
placemakers :: parks & trees
Austin, TX
big visions for community economics
the Chenoggye freeway in Seoul ~ 1970-2005
Chenoggyeon – 8.4 km, $900 M initial public criticism!
ALPHA:
Awaji Landscape Planning & Horticulture Academy
typical retail street in urban Japan
Namba Parks, Osaka
view from nearby hotel
interior retail space

ground level
small plazas, retail entry
passive nature experiences
Namba Parks: retail success & nature experience benefits
Converting Gray to Green
High Line Railway - W Manhattan
The High Line :: June 2009
- between 2003 and 2011
- nearby property values increased 103% (despite the deep recession)
- $2 billion was invested in nearby properties development
Summary

• community trees & forests – working for the environment
• & for human health & wellness
• evidence portal: Green Cities: Good Health
• placemaking – make no small plans!
• plan & design for co-benefits
• economic implications – ROI