Bridging Science and the Sacred: how do we connect evidence & emotion?

......... more evidence

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University of Washington (Seattle)
College of the Environment

Women's Arboriculture Conference
Harrison Hot Springs Resort - March 2014
scientific evidence & environmental ‘services’
Urban Heat Island Effect
studies by NASA & EPA

urban trees = mitigation
Hilton Head, South Carolina
high land values
reduced public funds
community needs
new parks??

SO . . . . . .
multi-tasking nature
creating co-benefits
Reducing Stormwater Runoff

Image courtesy of the Center for Urban Forest Research
Pierce County WA, Chambers Creek Properties - 4 year growth
stormwater management

Parks & People Foundation, Baltimore
Tanner Springs Park
Portland OR
linked to active living network
neighborhood social cohesion

environmental education & social learning
the social scientist’s bias . . . .

the importance of
trees and nature in everyday life

all through the life course!
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
Nature & Psych Development
children’s play & imagination
http://www.treeclimbing.jp/
physically disabled & tree climbing!
recreational tree climbing – youth therapy
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
What is the Evidence?

urban greening & city trees
environment
public health
economics
Research Reviews

Green Cities: Good Health

Metro nature - including trees, parks, gardens, and natural areas - enhance quality of life in cities and towns. The experience of nature improves human health and well-being in many ways. Nearly 40 years of scientific studies tell us how. Here’s the research...

RESEARCH THEMES

- Livable Cities
- Place Attachment & Meaning
- Community Building
- Community Economics
- Social Ties
- Crime & Fear
- Reduced Risk
- Wellness & Physiology
- Active Living
- Healing & Therapy
- Mental Health & Functioning

www.greenhealth.washington.edu

on-line resource

summaries complete: soon!

next? economic valuation
Research Review and Summaries

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USDA Forest Service, U&CF Program
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thanks to
U of WA students:
Katrina Flora
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.\(^1\)\(^,\)\(^2\) 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.\(^9\)

- A study found 7% higher rental rates for commercial offices having high quality landscapes.\(^14\)

- Shoppers claim that they will spend 9% to 12% more for goods and services in central business districts having high quality tree canopy.\(^34\)

- 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.\(^34\)
Urban Green :: Human Health & Well Being

> 2,800 articles

% distribution
Eco-Health Relational Browser
Environmental Protection Agency

www.epa.gov/research/healthscience/browser/
Eco–Health Relationship Browser

You are here: EPA Home > Research > Health Research > Eco–Health Relationship Browser

- Open the Relation Browser in a new window
- Copy of all the Relation Browser data (XML)
- Copy of all the Relation Browser data (PDF) (50 pp, 477K, About PDF)

Click a topic bubble or choose a topic from the dropdown list above.
Hover over linkages [*] to view relationship between elements.

Details
Description
An urban ecosystem is a dynamic system that contains both built and natural elements on a regional scale. In an urban ecosystem, human, plant and animal communities are situated within an urban environment. Urban ecosystems can mimic the function of natural ecosystems and thus provide their own important ecosystem services that contribute to human well-being in those urban areas. Various green environments such as shade trees, urban green spaces and urban forests can exist within a single urban region. The services provided by urban ecosystems include filtering water runoff, providing areas for physical activity and recreation such as hunting and bird watching, and mitigating the Urban Heat Island effect by capturing heat absorption in the area.
Click a topic bubble or choose a topic from the dropdown list above. Hover over linkages (+) to view relationship between elements.

Urban Ecosystems

- Air Filtration
- Water Regulation
- Water Filtration
- Engagement with Nature
- Heat Mitigation
- Promotion of Physical Activity

Details
- Description
  - An urban ecosystem refers to a network of natural and human-made structures, such as natural green spaces, urban forests, and parks, that provide important services for human health and well-being.

Health Outcome
- ADHD
- Aggression
- Anxiety
- Arthritis
- Asthma

Birth Outcomes
- Improved pregnancy outcomes
- Lower likelihood of preterm birth

Citations of Key Studies
- Guidotti, 2010
- Hancock, 2002

- Forests
- Urban Ecosystems
- Wetlands


Restorative Nature Beyond the City?
evidence about the importance of ‘nearby nature’
Urban Greening & Health Evidence Framework
the importance of trees and nature in everyday life all through the life course!
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

Nature, Human Health & Walkable Neighborhoods

- Environments: Neighborhood Streets (Tokyo)
  - tree-lined
  - parks

- Outcomes: Elderly People & Walking
  - less illness
  - lower mortality rate over 5 years

parks, recreation, active transit
make room for pedestrians
Atlanta Regional Council
elder care and services summit

September 2013
record attendance
service agencies
food programs
care facilities
medical community
Elders & Horticulture Therapy
方法
実験1:
課題①: 2種の土を混ぜる
課題②: 土を鉢に入れる
課題③: 花を鉢に植える

Dr. Masahira Toyoda;
University of Hyogo, Kobe

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写真引用 福田正人, 三國雅彦. 近赤外線スペクトロスコピINRによる統合失調症と感情障害の診断.
園芸作業中のOxy-Hb濃度変化

$m \cdot mm$

0.1sec

1: mix
2: fill
3: plant
4: cont
in the background

nearby nature for human health & well-being
Nature :: From Aesthetics to Necessity in Cities


experiences of science & sacred
Closing

- ‘lean in’
- urban trees & greening are very important for human health and wellness
- we have scientific evidence
- but there is more!
- ‘reveal’ this importance to clients & citizens
Human Dimensions of
Urban Forestry and
Urban Greening

featuring research on peoples’
perceptions and behaviors
regarding nature in cities

Nature and Consumer Environments
Research about how the urban forest
influences business district visitors.

Trees and Transportation
Studies on the value of having quality
landscapes in urban roadsides.

Civic Ecology
Studies of human behaviors and benefits when
people are active in the environment.

Policy and Planning
Integrating urban greening science
with community change.

Urban Forestry and Human Benefits
More resources, studies and links . . .

Projects Director
Kathleen L. Wolf, Ph.D.

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