Landscape Benefits:
Balancing Risk and Livable Spaces

Kathleen Wolf, Ph.D.
Research Social Scientist

University of Washington
College of the Environment

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Rachel Carson (1907-1964)

1962
A Remarkable Career

- aquatic biologist, U.S. Bureau of Fisheries
- 1950s full time nature writer
- 1951 Sea Around Us, National Book Award
- The Edge of the Sea, Under the Sea Wind
- 1962 Silent Spring, national pesticide policy
- launched grassroots environmental movement
- creation of the Environmental Protection Agency
Pervasive Pesticides

Glenbow Archives NA-5600-6671a
Environment = Toxin, Risk

Cuyahoga River, OH

Love Canal, Niagra Falls
Beyond Toxicity
Human Health and the Natural Environment

Howard Frumkin, MD, DrPH, FACP, FACOEM

Abstract:
Research and teaching in environmental health have centered on the hazardous effects of various environmental exposures, such as toxic chemicals, radiation, and biological and physical agents. However, some kinds of environmental exposures may have positive health effects. According to E.O. Wilson’s “biophilia” hypothesis, humans are innately attracted to other living organisms. Later authors have expanded this concept to suggest that humans have an innate bond with nature more generally. This implies that certain kinds of contact with the natural world may benefit health. Evidence supporting this hypothesis is presented from four aspects of the natural world: animals, plants, landscapes, and wilderness. Finally, the implications of this hypothesis for a broader agenda for environmental health, encompassing not only toxic outcomes but also salutary ones, are discussed. This agenda implies research on a range of potentially healthful environmental exposures, collaboration among professionals in a range of disciplines from public health to landscape architecture to city planning, and interventions based on research outcomes.

Medical Subject Headings (MeSH): animals, ecology, environmental health, nature, plants, trees

American Journal of Preventive Medicine, 2001
Restorative Nature
Beyond the City
Evidence about the importance of ‘nearby nature’
Finding that study . . . . . .
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: November 2012
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. 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.

- A study found 7% higher rental rates for commercial offices having high quality landscapes.

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

- 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.
Urban Green :: Human Health & Well Being

> 2,200 articles
Research Review and Summaries

Sponsors:
University of Washington
USDA Forest Service, U&CF Program
NGO partners

thanks to U of WA students:
Katrina Flora
Mary Ann Rozance
The Evidence of Nature, Well-Being and Livable Spaces

data from the research
The Evidence of Nature, Well-Being and Livable Spaces

well managed forest canopy in central business districts
Trees & Retail Environments Research
Trees & Shopper Environments Research

• Research Questions •
  trees and visual quality?
  trees and consumer behavior?
  trees and product pricing?

• Methods:
  mail out/in surveys
  national or local sample
  residents/nearby city residents

partners: U of Washington, NGOs, business organizations
funded by USDA Forest Service
Image Categories (sorted by ratings)

Pocket Parks
mean 3.72 (highest)

Full Canopy
mean 3.63

Scale: 1=not at all, 5=like very much, 26 images
Enclosed Sidewalk
3.32

Intermittent Trees
2.78
No Trees
mean 1.65
(lowest)

(high - 3.72)
1. Place Perceptions
   - Place Character
   - Interaction with Merchants
   - Quality of Products

2. Patronage Behavior
   - travel time, travel distance
   - duration & frequency of visits
   - willingness to pay for parking

3. Product Pricing
   - higher willingness to pay for all types of goods
   - higher in districts with trees – 9-12%
The Evidence of Nature, Well-Being and Livable Spaces

nature and mental performance
Attention Restoration Theory
Rachel & Stephen Kaplan U of MI
directed attention fatigue . . . .
Workplace Nature Views

- **Well-being**
  - desk workers without view of nature reported 23% more ailments in prior 6 months

- **Job Satisfaction**
  - less frustrated and more patient
  - higher overall job satisfaction and enthusiasm

Nature Response
Neuroscience

Figure 5: Brain Areas that show greater activation for nature pictures in green, and areas that show greater activation when viewing the urban pictures in red. Activations are displayed with a t-stat > 2.0.
Horticulture Therapy & Brain Activity
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

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フォルダ装着位置は、額の正中位で且つ眉から1cm上とした。
園芸作業中のOxy-Hb濃度変化
The Evidence of Nature, Well-Being and Livable Spaces

nature and healing or therapy
hospital healing gardens: patients; family and friends; professional staff

health care $$ savings
healing gardens
soothing
distracting
calm focus
The Evidence of Nature, Well-Being and Livable Spaces

nature, schools, & learning
School & Learning
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

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
first phase - reading circle
nature recovery & schools
Parks & People Foundation, Baltimore

Planning skills & efficacy

Two children are planting plants in the dirt.
SITES™: Measuring and Rewarding Sustainable Landscapes
An interdisciplinary effort to create voluntary national guidelines and a rating system for sustainable land design, construction and maintenance practices for landscapes of all types, with or without buildings.
For more information: visit www.sustainablesites.org
or email info@sustainablesites.org
Research & Evidence Based

SOILS

HUMAN HEALTH & WELL-BEING

MATERIALS

VEGETATION

WATER
Project Applications
SITES Pilot Program – Project Types

>150 projects :: two year pilot review

- OPEN SPACE / PARK (25%)
- INSTITUTIONAL (20%)
- COMMERCIAL (15%)
- RESIDENTIAL (13%)
- STREETSCAPE / TRANS. CORRIDOR (8%)
- GARDEN / ARBORETUM (8%)
- GOVERNMENT (6%)
- MIXED USE (4%)
- INDUSTRIAL (1%)
public comment on credits & ratings to Nov 5
Summary:

history :: nature as risk to nature as necessity

40 years of research about city greening and human health and welfare

credit and recognition for sustainability – SITES
Human Dimensions of Urban Forestry and Urban Greening

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

What's New?

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.

Green Cities: Good Health human health & well-being research

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

Projects Director
Kathleen L. Wolf, Ph.D.

www.naturewithin.info