

The background of the slide features a close-up of vibrant green leaves with prominent veins, overlaid with a semi-transparent white rounded rectangle. Below the leaves, the bottom portion of the slide shows a blue-green water surface with gentle ripples. The text is centered within the white rectangle.

Green Infrastructure & Positive Public Health

Potential geospatial linkages?

Dr. Kathleen Wolf

College of the Environment
University of Washington

October 2010



Outline

Green Infrastructure
Positive Public Health
Geospatial Linkages



parks, open spaces & trails





urban greening :: livable communities

Trees & Retail Environments Research





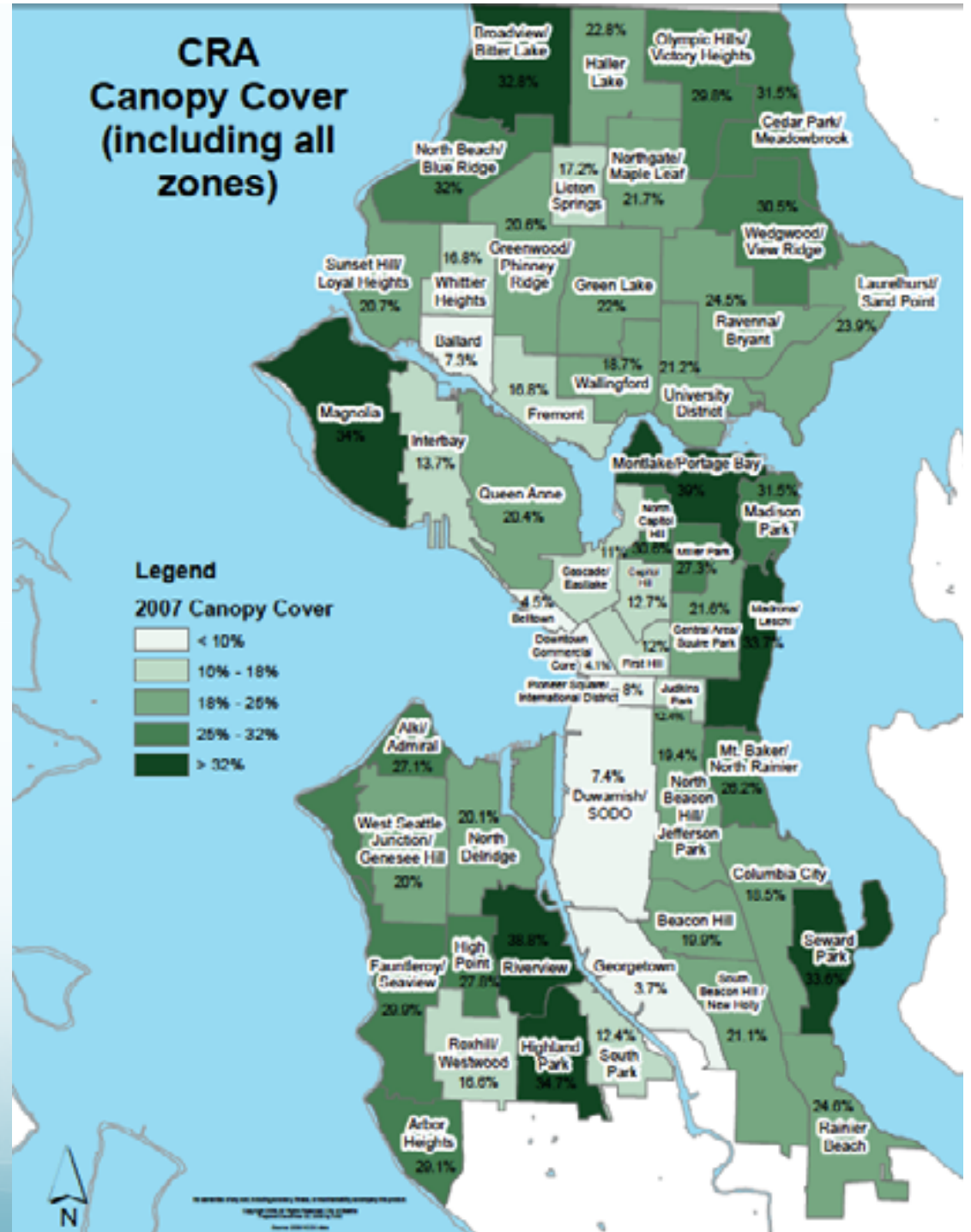
awe, wonder, & spirituality

urban forest :: public & private



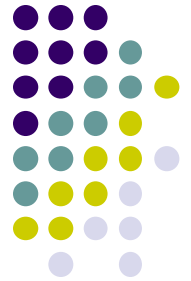
Urban Tree Canopy Analysis

Seattle 2007



Green Infrastructure Elements

an analog “cloud”



Parks & Open Space

Urban Forest

Streetscapes

Recovered Vacant Lots

Community Gardens

Outdoor Classrooms

Urban Waterfront & Shoreline

Low Impact Development



Low Impact Development



**stormwater
management**



Green Roof - Chicago City Hall





**engineered
nature & forests**



Nashville, mixed use bldg **roof gardens/ecosystems**

The High Line :: June 2009



High Line Railway

lower west side, Manhattan





Nature & Livable Cities!



**Namba
Parks
Osaka, Japan**

**retail &
open space
complex**



restorative nature experiences





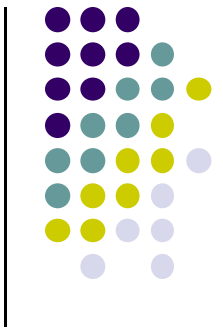
Outline

Green Infrastructure
Positive Public Health
Geospatial Linkages

beauty & aesthetics,
and much more . . .



Dean of School of Public Health
University of Washington



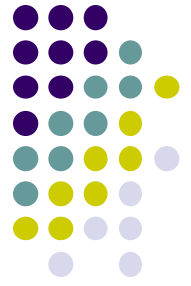
Review and Special Articles

Beyond Toxicity
Human Health and the Natural Environment

Howard Frumkin, MD, DrPH, FACP, FACOEM

American Journal of Preventive Medicine, 2001

Finding that study



Research Reviews



first phase:
June 2010

summaries
complete:
Dec 2010

sponsor:
US Forest Service

Urban Forestry/Urban Greening Research

Green Cities: Good Health

INTRODUCTION RESOURCES FUTURE RESEARCH REFERENCES

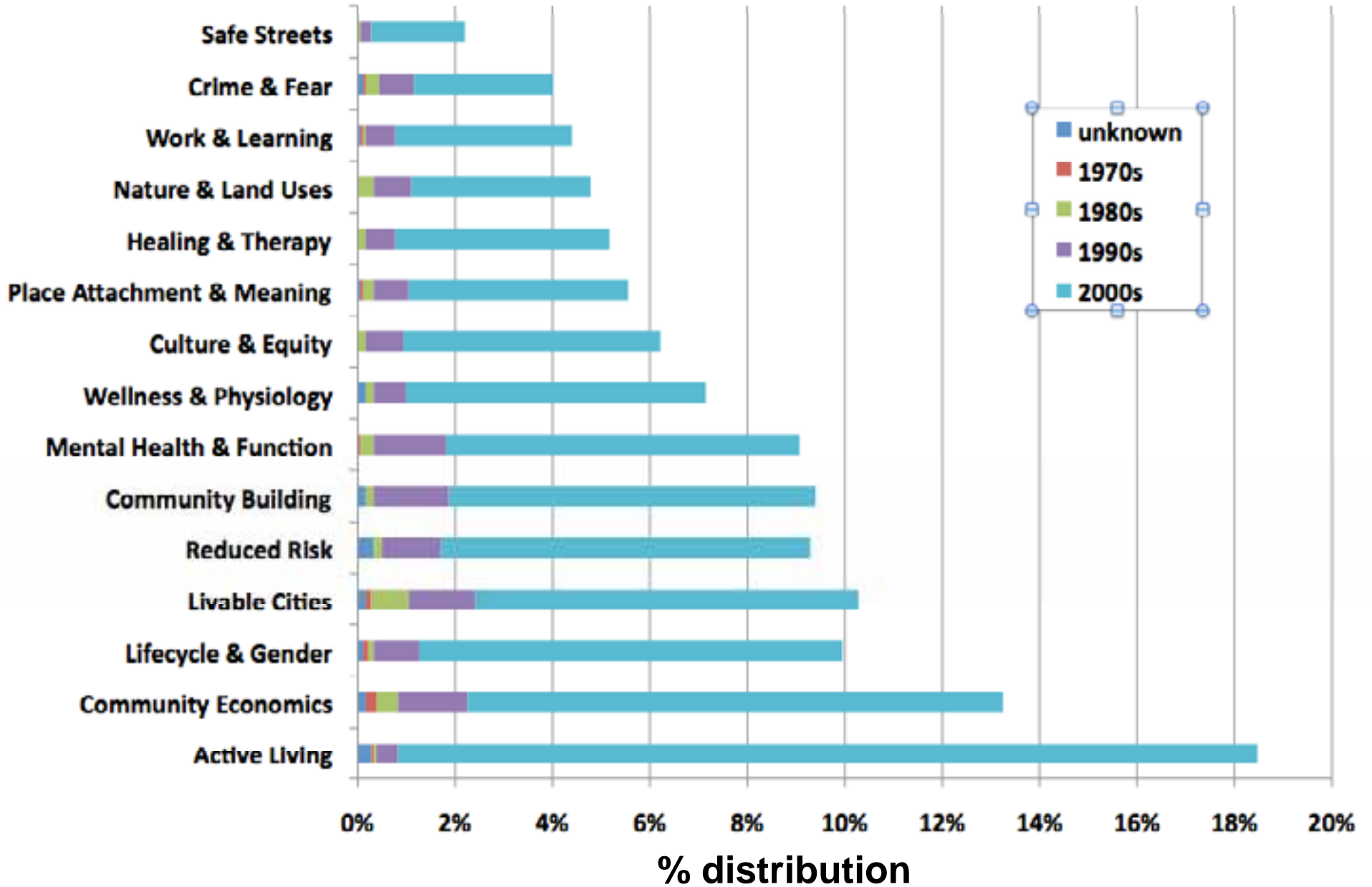
Metro nature - including trees, parks, gardens, and natural areas - enhance quality of life in cities and towns. The experience of nature improves human health and well-being in many ways. Nearly 40 years of scientific studies tell us how. Here's the research ...

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

<http://www.greenhealth.washington.edu>

1,528 articles



hospitals: healing gardens



U of WA Hospitals Surgery Pavilion



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



課題①

③



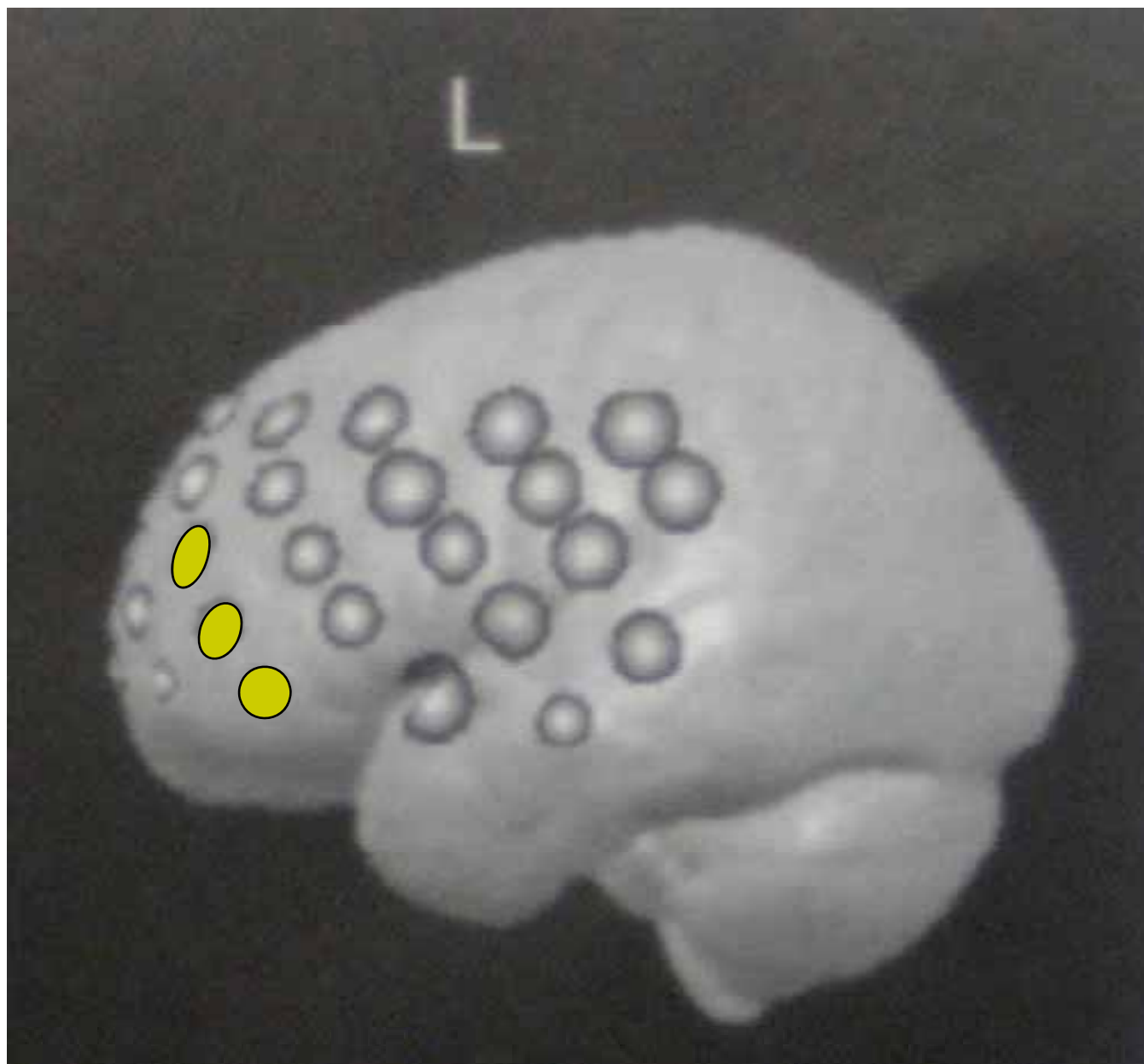
課題②



課題③



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



写真引用 福田正人，三國雅彦．近赤外線分光鏡による統合失調症と感情障害の診断．

図14．NIRSチャンネルと標準脳との対応．精神医学49(3)．P241．2007．

work & directed attention fatigue



Kaplan, R. 1993.
Landscape and Urban Planning

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**

Plants in Workplace

- **Productivity**
 - 12% quicker reaction on computer tasks
 - reports of being more attentive
- **Less Stress**
 - lower systolic blood pressure





make room for pedestrians



recreational tree climbing (& youth therapy)



Community Resilience



**collaborative
resource
management
Elinor
Ostrom**



Outline

Green Infrastructure
Positive Public Health
Geospatial Linkages



Tools for assessing and managing Community Forests

[About i-Tree >>](#)



Assessing Urban Ecosystems

Find out how to assess *all* the trees in your community.

[click here to begin](#)



Assessing Street Tree Populations

Learn how to assess *just* the street trees in your community.

[click here to begin](#)



Applications and Utilities

Access tools available for your tree management.

[click here to begin](#)

The i-Tree Tools help quantify the structure, function and value of tree populations. They provide a scientific process for data collection, analysis and quantification of the benefits.

[Find out more >>](#)

i-Tree Suite of Software



Improving Air Quality

reduced particulates & emissions

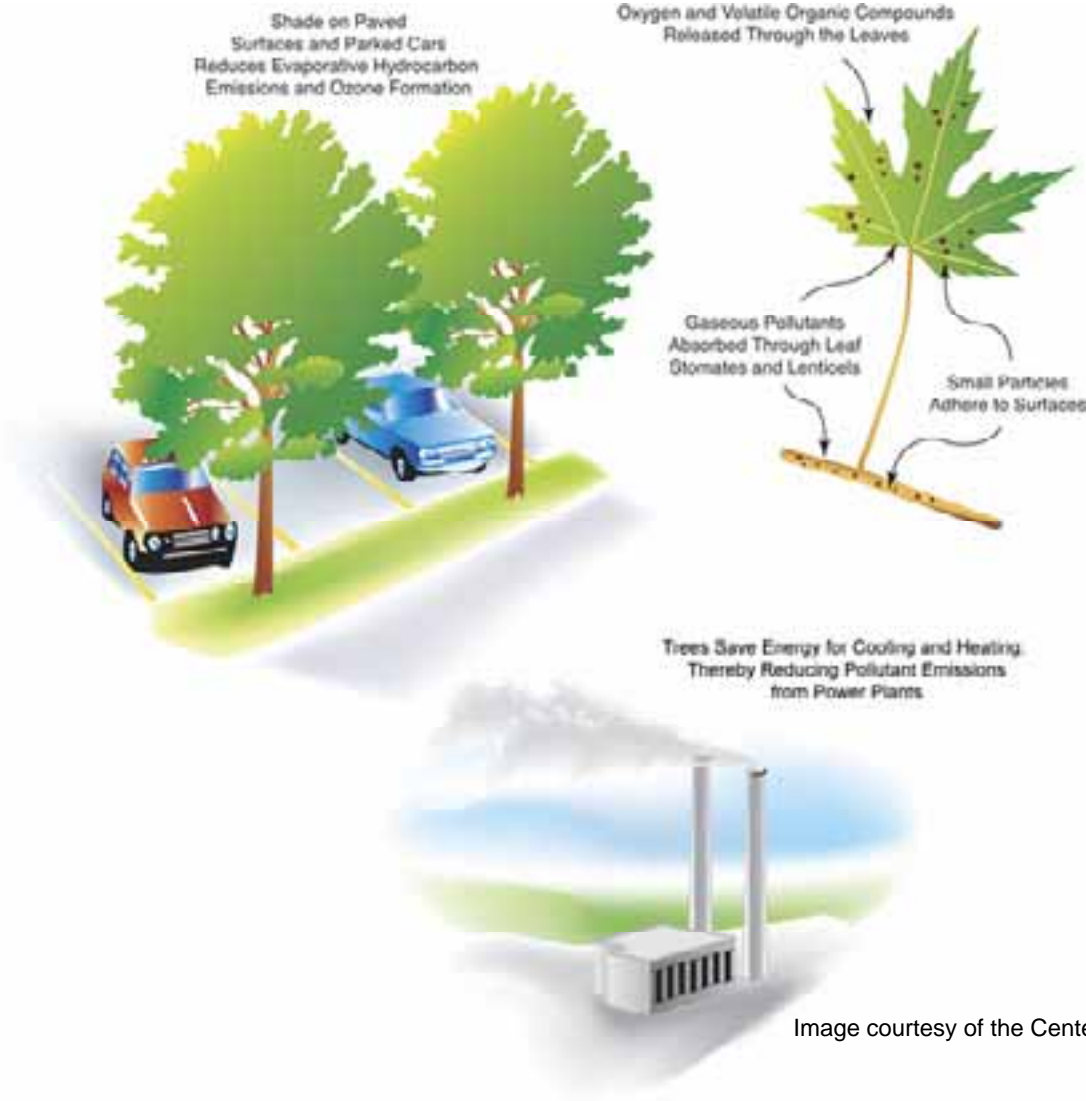


Image courtesy of the Center for Urban Forest Research

Reducing Atmospheric Carbon Dioxide



Image courtesy of the Center for Urban Forest Research

Reducing Stormwater Runoff

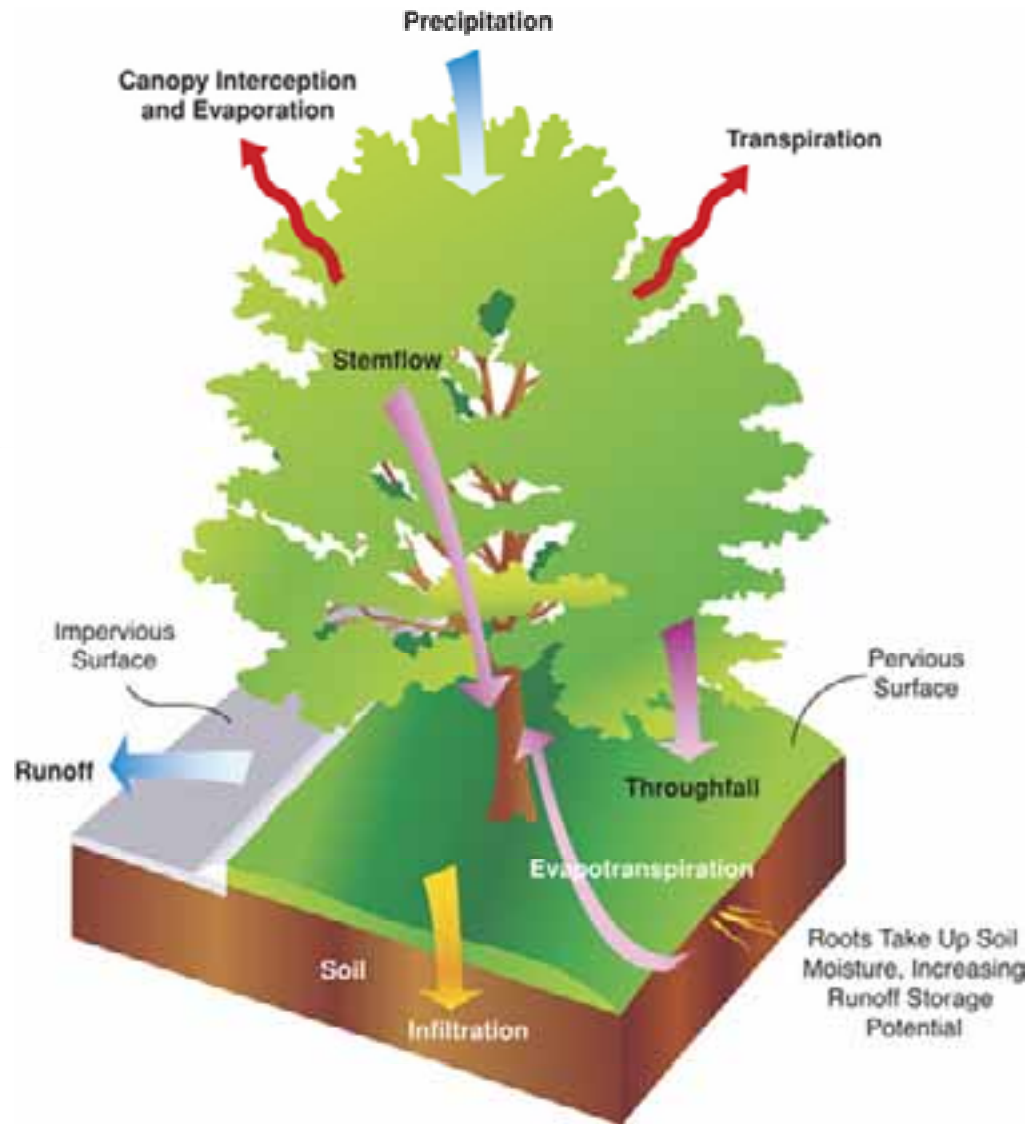


Image courtesy of the Center for Urban Forest Research

Conserving Energy – building shading



Image courtesy of the Center for Urban Forest Research

Benefits of green infrastructure?



**human health,
functioning &
well-being**



Green Infrastructure “objects” remote sensing :: raster to vector



benefits
measures
economic
values
geospatial
markers
(remote sensing)

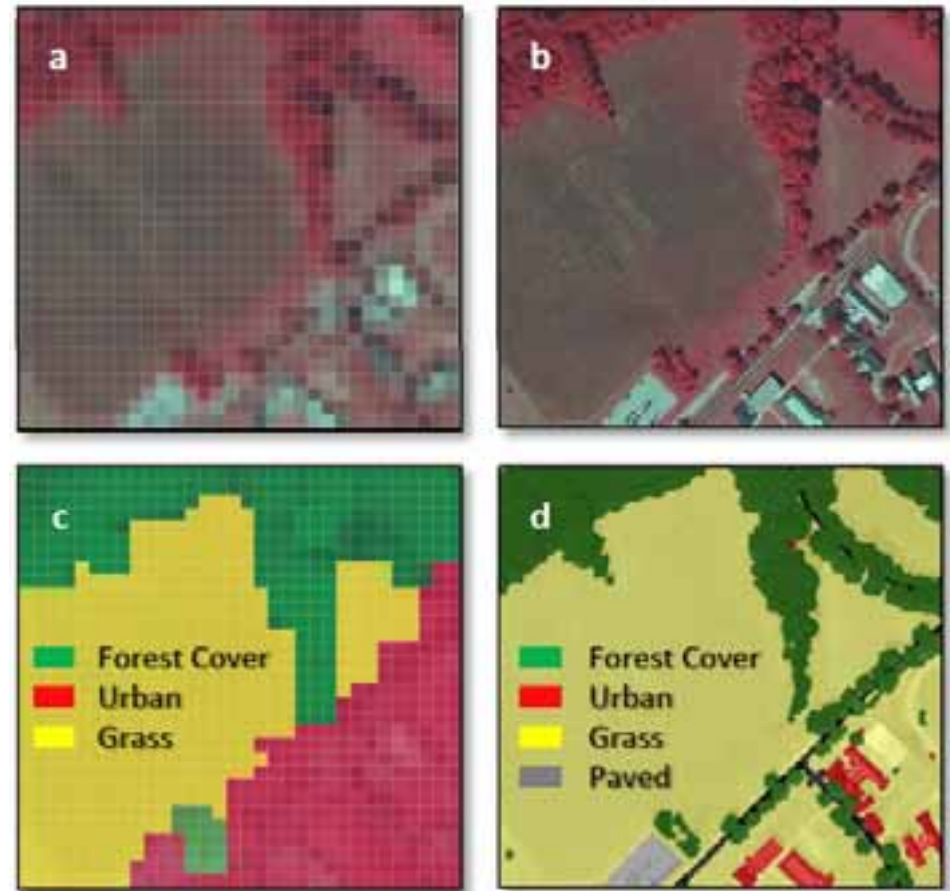
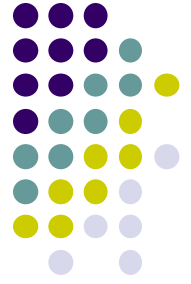
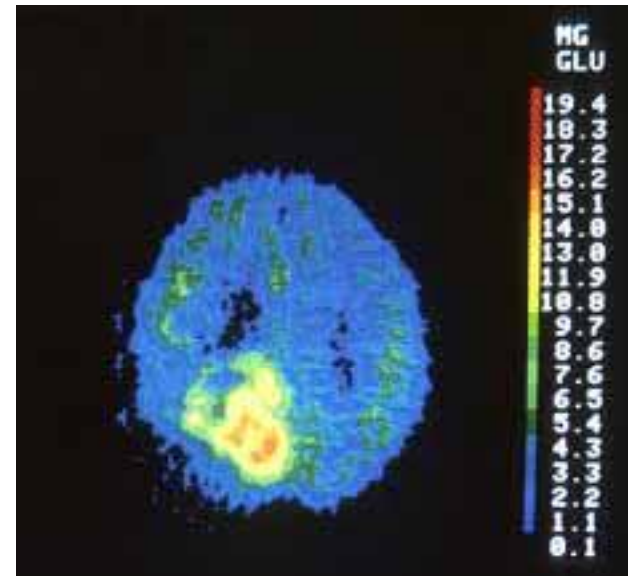


Figure 1. Comparison between a Landsat 30m pixel resolution image (a) classified using per-pixel method (c), and a National Agricultural Imagery Program (NAIP) 1m pixel resolution image (b) classified using Object Based Image Analysis method (d). Note the higher image detail in the OBIA classification and the greater number of classes possible.

OBIA?

object based image analysis



remote sensing (medical then geographic)
analysis of multi-sensor, multi-resolution data
generation, modeling, & classification of objects
feature recognition and thematic extraction

Urban Forestry/Urban Greening Research

Green Cities: Good Health



INTRODUCTION RESOURCES FUTURE RESEARCH REFERENCES

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**
- Community Building
- Community Economics
- Social Ties
- Crime & Fear
- Reduced Risk
- Wellness & Physiology
- Active Living
- Healing & Therapy
- Mental Health & Fitness

College of the Environment University of Washington

Human Dimensions of Urban Forestry and Urban Greening

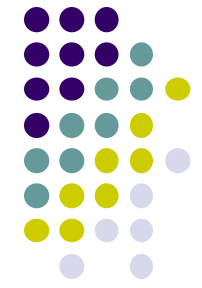
featuring research on peoples' perceptions and behaviors regarding nature in cities

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

Human Health and Well-Being Research

Project Director
Kathleen L. Wolf, Ph.D.

www.naturewithin.info