The Profound Social Costs of a Disappearing Urban Forest

Frances E. Kuo
University of Illinois, Urbana-Champaign
The Profound Social Costs of a Disappearing Urban Forest:

Are Trees a Necessary Component of a Healthy Human Habitat?
Urban Forestry Today: The Challenge
An Alarming Trend
An Alarming Trend
An Alarming Trend

Cheryl Kollin, Director
Urban Forest Center
American Forests
An Alarming Trend

Cheryl Kollin...

We estimate that cities in the NE and Pacific NW have lost 30% of their heavy tree canopy over the last 30 years.
An Alarming Trend

Atlanta
Washington DC
Portland, OR
Chattanooga
An Alarming Trend

Atlanta  ↓ 36%
Washington DC
Portland, OR
Chattanooga
An Alarming Trend

- Atlanta: ↓36%
- Washington DC: ↓43%
- Portland, OR
- Chattanooga
An Alarming Trend

Atlanta  ↓36%
Washington DC  ↓43%
Portland, OR  ↓48%
Chattanooga
## An Alarming Trend

<table>
<thead>
<tr>
<th>City</th>
<th>Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlanta</td>
<td>36%</td>
</tr>
<tr>
<td>Washington DC</td>
<td>43%</td>
</tr>
<tr>
<td>Portland, OR</td>
<td>48%</td>
</tr>
<tr>
<td>Chattanooga</td>
<td>50%</td>
</tr>
</tbody>
</table>
Urban Forestry Today

- Disappearing urban forest
Urban Forestry Today

- Disappearing urban forest
- Municipal budgets shrinking fast
Urban Forestry Today

- Disappearing urban forest
- Municipal budgets shrinking fast
- Urban forest low in municipal priorities
Urban Forestry Today

- Disappearing urban forest
- Municipal budgets shrinking fast
- Urban forest low in municipal priorities

The Challenge:
Urban Forestry Today

- Disappearing urban forest
- Municipal budgets shrinking fast
- Urban forest low in municipal priorities

The Challenge: Show that urban forestry addresses important societal needs
The Profound Social Costs of a Disappearing Urban Forest
Why Expect Profound Social Costs?

Documenting Social Costs Convincingly

What We’re Finding
Why Expect Profound Social Costs?
Why Expect Profound Social Costs?

Three facts...
Why Expect Profound Social Costs?

Three facts...

- Unfit habitats lead to social, psychological, and physical breakdown
Why Expect Profound Social Costs?

Three facts…

- Unfit habitats lead to social, psychological, and physical breakdown

- Animals are drawn to habitats in which they thrive, find unfit habitats aversive
Why Expect Profound Social Costs?

Three facts...

- Unfit habitats lead to social, psychological, and physical breakdown

- Animals are drawn to habitats in which they thrive, find unfit habitats aversive

- Humans like trees
Why Expect Profound Social Costs?

...and One Implication
Why Expect Profound Social Costs?

...and One Implication

- A disappearing urban forest may lead to social, psychological, and physical breakdown in humans
Documenting Social Costs Convincingly

- High vs. low UF conditions
- Conditions otherwise identical
Documenting Social Costs Convincingly

Robert Taylor Homes without greenspace

Robert Taylor Homes with greenspace
Documenting Social Costs Convincingly

Ida B. Wells Homes without greenspace

Ida B. Wells Homes with greenspace
Documenting Social Costs Convincingly

- High vs. low UF conditions
- Conditions otherwise identical
- Random assignment
- Within Subjects designs
- Checks for a priori differences
- Double-blind testing
- Objective measures

- Many Subjects
- Many Settings
- Many Measures
- Statistical testing
- Testing for mediation
- Testing for alternative mechanisms
Acknowledgements

- Andrea Faber Taylor
- William C. Sullivan
- the Human-Environment Research Lab

- US Forest Service and NUCFAC
- USDA CREES
- HUD
What are the social costs of a disappearing urban forest?
What we’re finding
Local Sense of Comm.

Use of outdoor common spaces

$p < .01$
Total Crimes

Density of vegetation

Low
Medium
High
Delay of gratification \( R^2 = .143, p < .001 \)

Naturalness of Apartment View
Concentration $R^2 = .126$, $p < .01$
Impulse Control  \( R^2 = 0.048, p = 0.05 \)
Self-discipline index $R^2=.203, p<.0001$
What we’re finding
What we’re finding

Social Breakdown
What we’re finding

Social Breakdown

_strength of community_
What we’re finding

Social Breakdown

✦ Strength of community
✦ Courtesy, mutual support
What we’re finding

Social Breakdown

- Strength of community
- Courtesy, mutual support
- Supervision of children outdoors
What we’re finding

Social Breakdown

- Strength of community
- Courtesy, mutual support
- Supervision of children outdoors

- Graffiti, noise, litter
What we’re finding

Social Breakdown

- Strength of community
- Courtesy, mutual support
- Supervision of children outdoors

- Graffiti, noise, litter
- Loitering, illegal activity
What we’re finding

Social Breakdown

- Strength of community
- Courtesy, mutual support
- Supervision of children outdoors
- Graffiti, noise, litter
- Loitering, illegal activity
- Property Crime
What we’re finding

Social Breakdown

- Strength of community
- Courtesy, mutual support
- Supervision of children outdoors
- Graffiti, noise, litter
- Loitering, illegal activity
- Property Crime
- Violent Crime
What we’re finding

Social Breakdown

- Strength of community
- Courtesy, mutual support
- Supervision of children outdoors

- Graffiti, noise, litter
- Loitering, illegal activity
- Property Crime
- Violent Crime
What we’re finding

Psychological Breakdown
What we’re finding

Psychological Breakdown

- Cognitive functioning
What we’re finding

Psychological Breakdown

- Cognitive functioning
- Management of major life issues
What we’re finding

Psychological Breakdown

- Cognitive functioning
- Management of major life issues
- Impulse control
What we’re finding

Psychological Breakdown

- Cognitive functioning
- Management of major life issues
- Impulse control
- Delay of gratification
What we’re finding

Psychological Breakdown

- Cognitive functioning
- Management of major life issues
- Impulse control
- Delay of gratification

- Aggression
What we’re finding

Psychological Breakdown

- Cognitive functioning
- Management of major life issues
- Impulse control
- Delay of gratification

- Aggression
- Violence
What we’re finding

Psychological Breakdown

- Cognitive functioning
- Management of major life issues
- Impulse control
- Delay of gratification

- Aggression
- Violence
- Severity of AD/HD symptoms
What we’re finding

Psychological Breakdown

- Cognitive functioning
- Management of major life issues
- Impulse control
- Delay of gratification

- Aggression
- Violence
- Severity of AD/HD symptoms
What we’re finding

Physical Breakdown
Physical Breakdown

Mortality rates in older adults

Takano, Nakamura, & Watanabe, 2002
What are the social costs of a disappearing urban forest?
What we’re finding

Social Breakdown

(lower)

- Strength of community
- Courtesy, mutual support
- Supervision of children outdoors

(upper)

- Graffiti, noise, litter
- Loitering, illegal activity
- Property Crime
- Violent Crime
What we’re finding

Psychological Breakdown

- Cognitive functioning
- Management of major life issues
- Impulse control
- Delay of gratification

- Aggression
- Violence
- Severity of AD/HD symptoms
What we’re finding

Physical Breakdown

- Mortality rates in older adults
The Profound Social Costs of a Disappearing Urban Forest:

How Social Benefits Research Can Help Save Urban Forestry
Will policymakers listen?

How Social Benefits Research Can Help Save Urban Forestry
How Social Benefits Research Can Help Save Urban Forestry

Will policymakers listen?

- Chicago and elsewhere
How Social Benefits Research Can Help Save Urban Forestry

- $10 M tree-planting
- 20,000 trees -- more than ever in Chicago’s history
- “growing evidence... trees can help temper social ills”
How Social Benefits Research Can Help Save Urban Forestry

Will policymakers listen?

- Chicago and elsewhere

- 2002 U.S. Conference of Mayors
URBAN AND COMMUNITY FORESTRY

WHEREAS, the vitality of communities is strongly dependent on the quality of the city's infrastructure. Parks, tree cover, streetscapes and other green open space are an integral part of urban green infrastructure planning; and

WHEREAS, tree cover and associated green infrastructure provide significant ecological, social and economic benefits, including: reducing air and water pollution, slowing storm water runoff, and helping conserve energy; and

WHEREAS, access to green open space and tree sheltered streets alleviates the mental fatigue of urban life, increases socialization in those areas and promotes a greater sense of community; and

WHEREAS, people are more prone to spend time outdoors in a pleasing tree shaded environment and increased pedestrian traffic results in more eyes on the street that tends to reduce violent behavior and crime; and

WHEREAS, properly planned and managed green infrastructure saves municipal governments millions of dollars in air and storm water management costs, helps cities meet federal regulatory requirements for air and water quality, and increases property values; and

WHEREAS, federal funding of the USDA Forest Service Urban & Community Forestry program provides critical financial support for forestry programs in many municipal forestry programs,

NOW, THEREFORE, BE IT RESOLVED that the United States Congress should provide for full funding of $50 million for the Forest Service's Urban and Community Forestry Program in Fiscal Year 2003.

US Conf of Mayors

- Adopted resolution in support of urban and community forestry
How Social Benefits Research Can Help Save Urban Forestry

- Are there resources for communicating these findings to policymakers and the public?
How Social Benefits Research Can Help Save Urban Forestry

Some Resources

- www.herl.uiuc.edu
- Technical bulletins
- Powerpoint presentations
- “Olympic flyers”
How Social Benefits Research Can Help Save Urban Forestry

- Is there more we can do to save and strengthen urban forestry in the future?
Use these tools and others
- Public service campaign
- Airline magazines
- USA Today

Invest in high-quality research

Address important societal needs