# FROM ECOSYSTEM SERVICES TO SACRED SPACE:
## RESEARCH ON THE BENEFITS OF URBAN TREES

26 October 2013

New Jersey Shade Tree Federation Conference

Lindsay K. Campbell, PhD

USDA Forest Service, Northern Research Station

NYC Urban Field Station

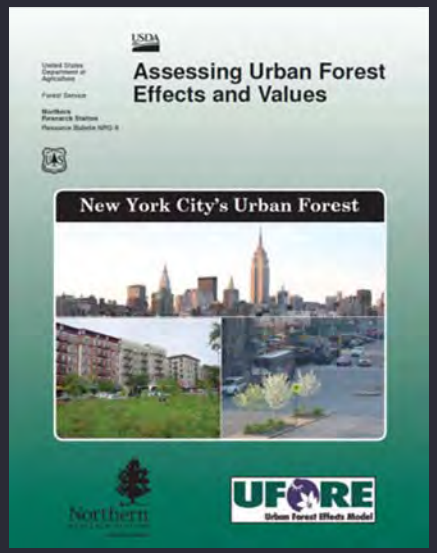
# Outline of the talk

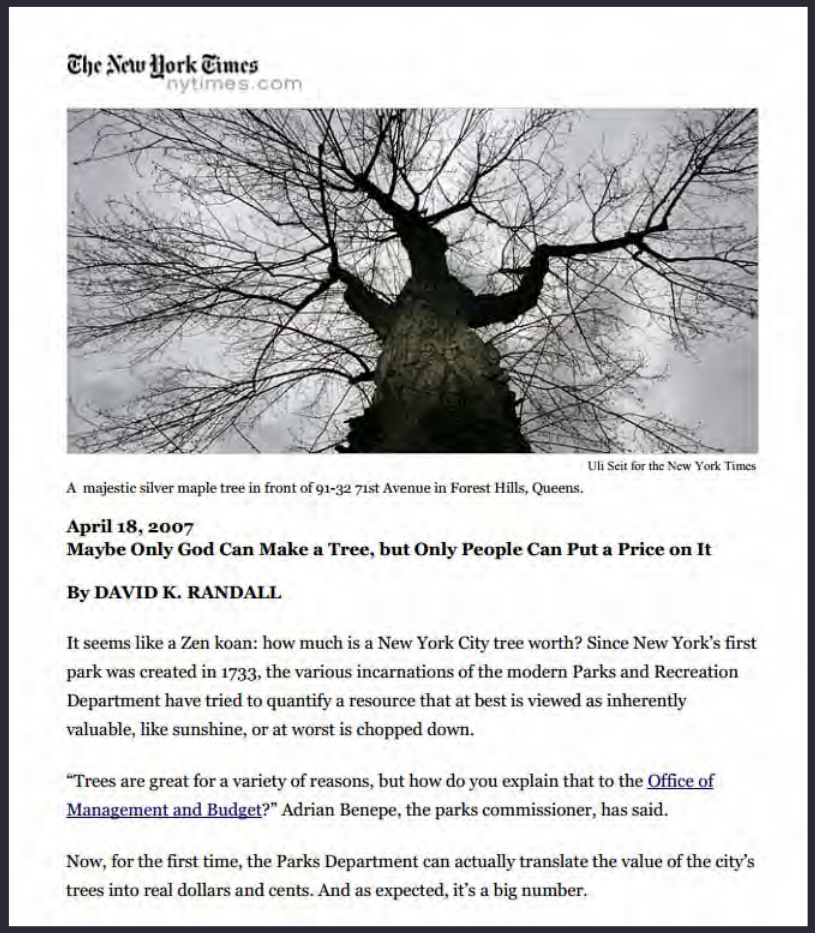
- Models for quantifying and valuing urban trees:
  - iTree (UFORE, STRATUM), UTC
- NYC Urban Field Station and the Human Ecosystem Framework
- Social science research on the value of trees / greenspace
  - Greening Post-Crisis
  - Volunteer Stewardship and Civic Engagement
  - Socio-cultural Ecosystem Services
- Conclusions

# Existing Forest Service models for valuing urban trees

iTree: Eco, Streets
UTC: Urban Tree Canopy

# STRATUM, UFORE → iTree: Quantification and Monetization





The New York Times
nytimes.com

Uli Seit for the New York Times

A majestic silver maple tree in front of 91-32 71st Avenue in Forest Hills, Queens.

**April 18, 2007**
**Maybe Only God Can Make a Tree, but Only People Can Put a Price on It**

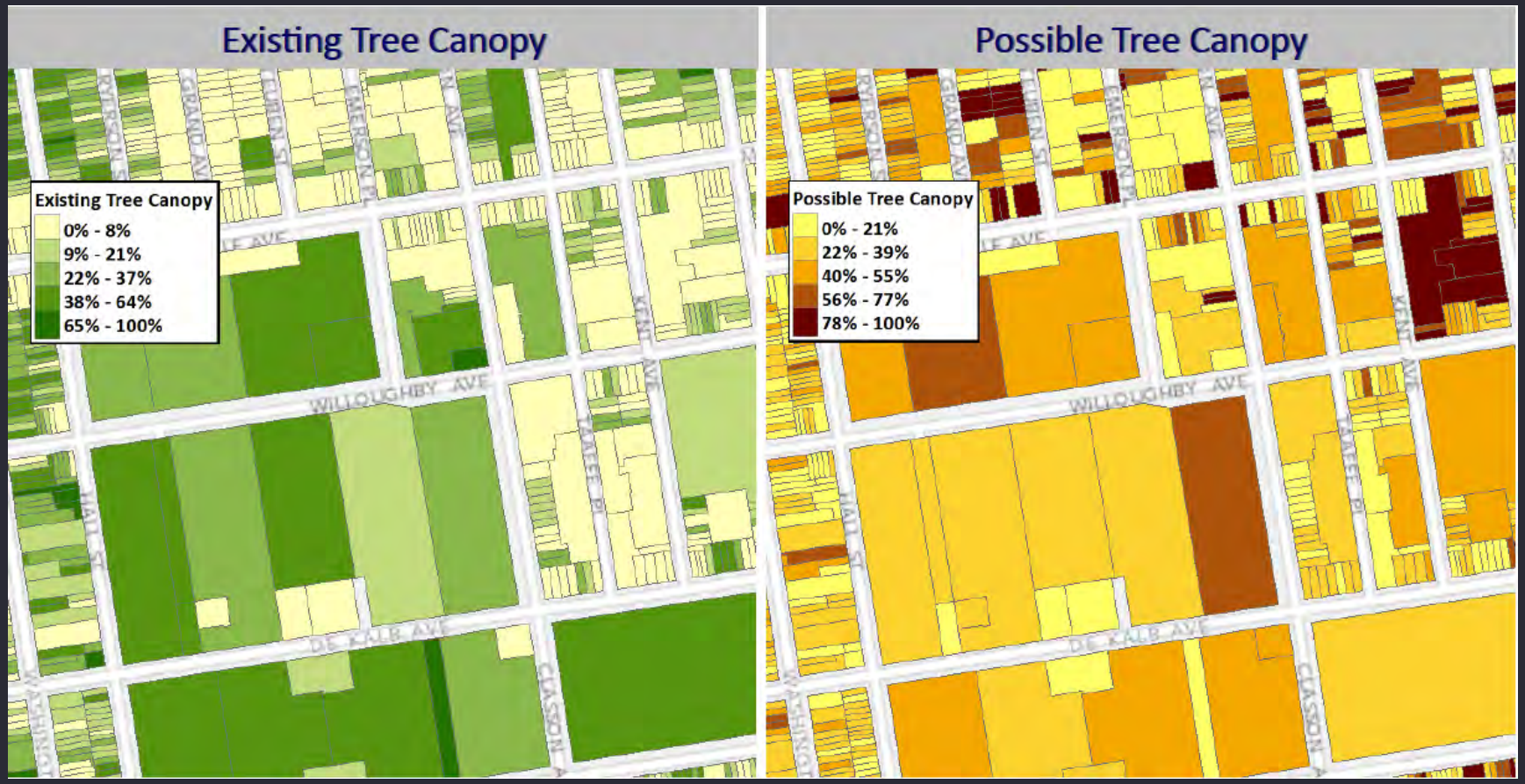
**By DAVID K. RANDALL**

It seems like a Zen koan: how much is a New York City tree worth? Since New York's first park was created in 1733, the various incarnations of the modern Parks and Recreation Department have tried to quantify a resource that at best is viewed as inherently valuable, like sunshine, or at worst is chopped down.

"Trees are great for a variety of reasons, but how do you explain that to the Office of Management and Budget?" Adrian Benepe, the parks commissioner, has said.

Now, for the first time, the Parks Department can actually translate the value of the city's trees into real dollars and cents. And as expected, it's a big number.

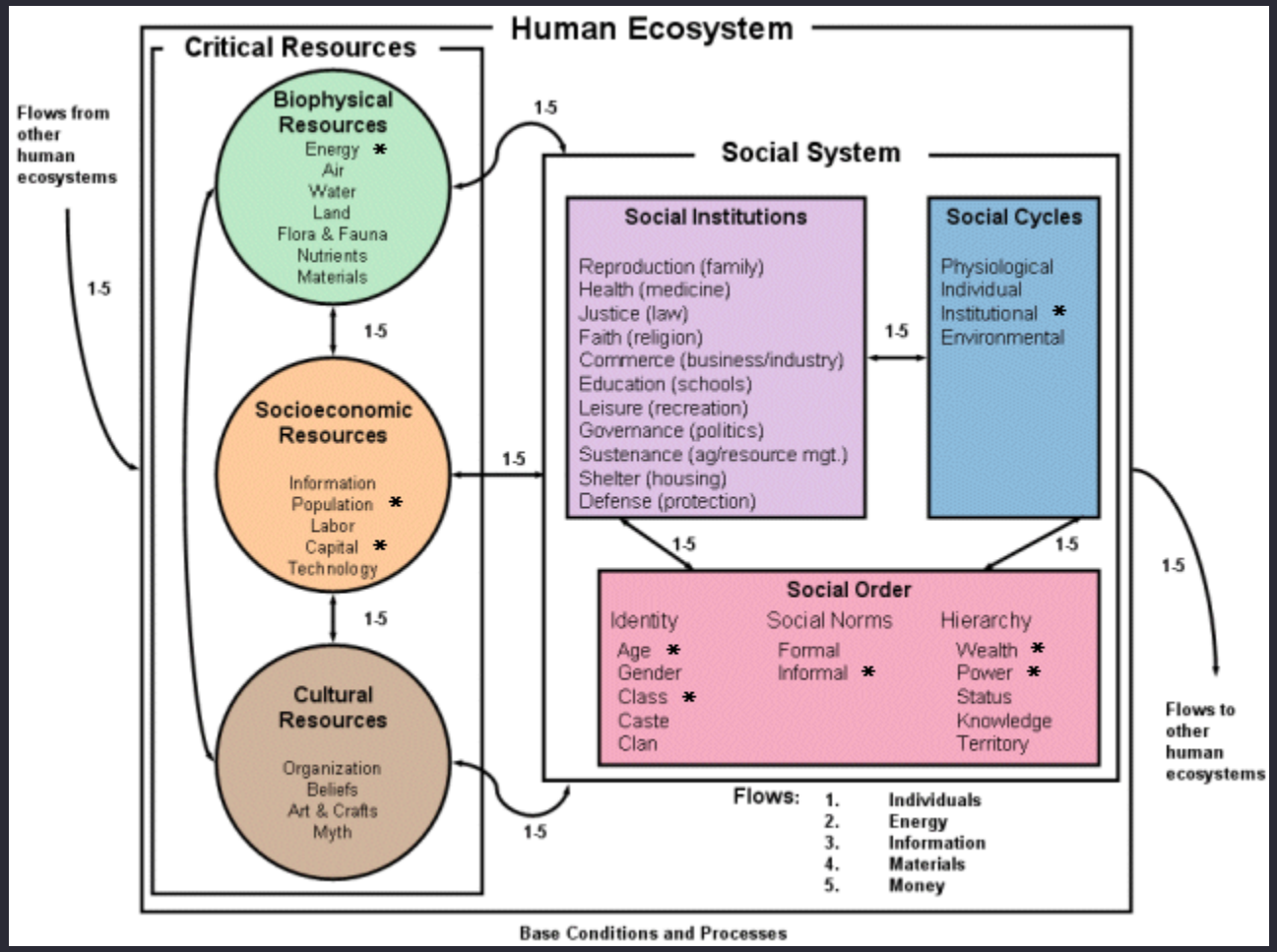
# Urban Tree Canopy (UTC):
# Parcel level mapping and decision-support tools



# NYC Urban Field Station

*"To improve quality of life in urban areas by conducting and supporting research about social-ecological systems and natural resource management"*

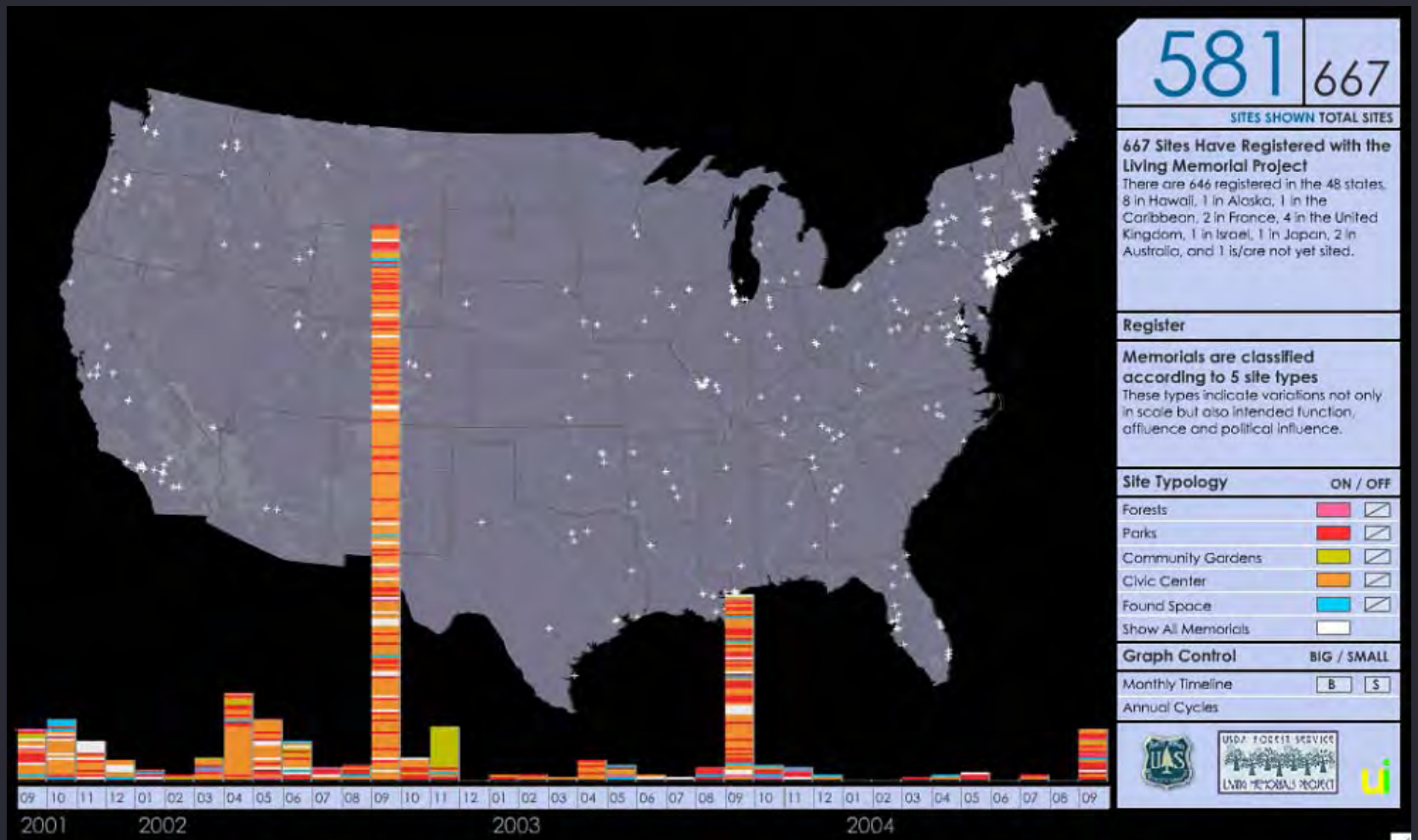
# Human Ecosystem Framework (HEF)




Source: Machlis et at 2005

# Greening Post-Crisis

# Living Memorials Project



# Stewards as First Responders

# Greening in the Red Zone

*"Red Zones"* refer to multiple settings (spatial and temporal) that may be characterized as intense, potentially or recently hostile or dangerous, including those in post-disaster situations caused by natural disasters such as hurricanes and earthquakes, as well as those associated with terrorist attacks and war, or longer term decline of capacity and resilience.

# Chronic disturbance and community greening

Detroit 1949

# Chronic disturbance and community greening

Detroit 2012

# Chronic disturbance and community greening

Photo by Steffi Graham

New York City: 1975, 1999

# Landscapes of resilience: Joplin, MO and NYC

May 2011 EF5 tornado

Oct 2012 Superstorm Sandy

NATURE NARRATIVES

SACRED SPACE

COMMUNITY PROCESSES

INDIVIDUAL EXPERIENCES

# Frank Charles Memorial Park, Queens, NY

- Significant retired population
- Chronic disturbance: tides
- Acute disturbance: Sandy
- Concern about dead, low hanging limbs
- Active, informal stewardship group works against erosion

# Volunteer Stewardship and Civic Engagement

# Defining Urban Environmental Stewardship

Liz Christy, founder of Green Guerillas, in the Lower East Side

Mayor Bloomberg marking the halfway point in MillionTreesNYC

Shoreline cleanup in Queens, sponsored by private companies

Urban environmental stewards conserve, manage, monitor, advocate for or educate the public about the local environment (Fisher et al. 2007).

Source: From left to right– Green Guerillas, NY daily News, © Meg Cotner

# STEW-MAP: Mapping Stewardship Organizations

## Green Space

## Social Space

STEW-MAP research is being conducted in New York City, Philadelphia, Baltimore, Seattle, and Chicago.
Related projects are underway in San Juan and Los Angeles

# Digging Together

- Looked at volunteer stewards involved in MillionTreesNYC initiative
- Expanded to volunteer stewards working with Casey Trees in Washington, DC and Plant One Million in Philadelphia
- Involves random survey of volunteer tree planters and follow-up interviews

# Comparison of Civic Engagement for Survey Respondents and National Sample Data

| Civic Action | Percent of NYC Stewards | Percent of US Pop. |
|---|---|---|
| Signed a petition | 54.9% *** | 35.2% |
| Contacted an elected government representative | 36.1%*** | 22.3% |
| Attended a public, town, community board, or school meeting | 39.5%*** | 24% |
| Wore/posted a button/flyer/sticker/poster of political campaign | 24.8% | 29.3% |
| Participated in a protest | 12.8%*** | 6.1% |
| Contacted the media to express view | 19.0%*** | 5.1% |
| Gave a speech | 21.7%*** | 4.4% |
| Held or ran for public office | 6.5%* | .7% |
| Engaged in political discussion on the Internet | 13.5%*** | 5.4% |
| Worked for a political party | 6.5%* | 18.7% |

*t-test is significant at the 0.1 level. **t-test is significant at the 0.01 level. ***t-test is significant at the 0.001 level.

# Main Findings

- Volunteer stewards are significantly more civically engaged than the general American population
- The most involved stewards are the most engaged
- Local civic groups play a large role in mobilizing volunteer stewards to get involved

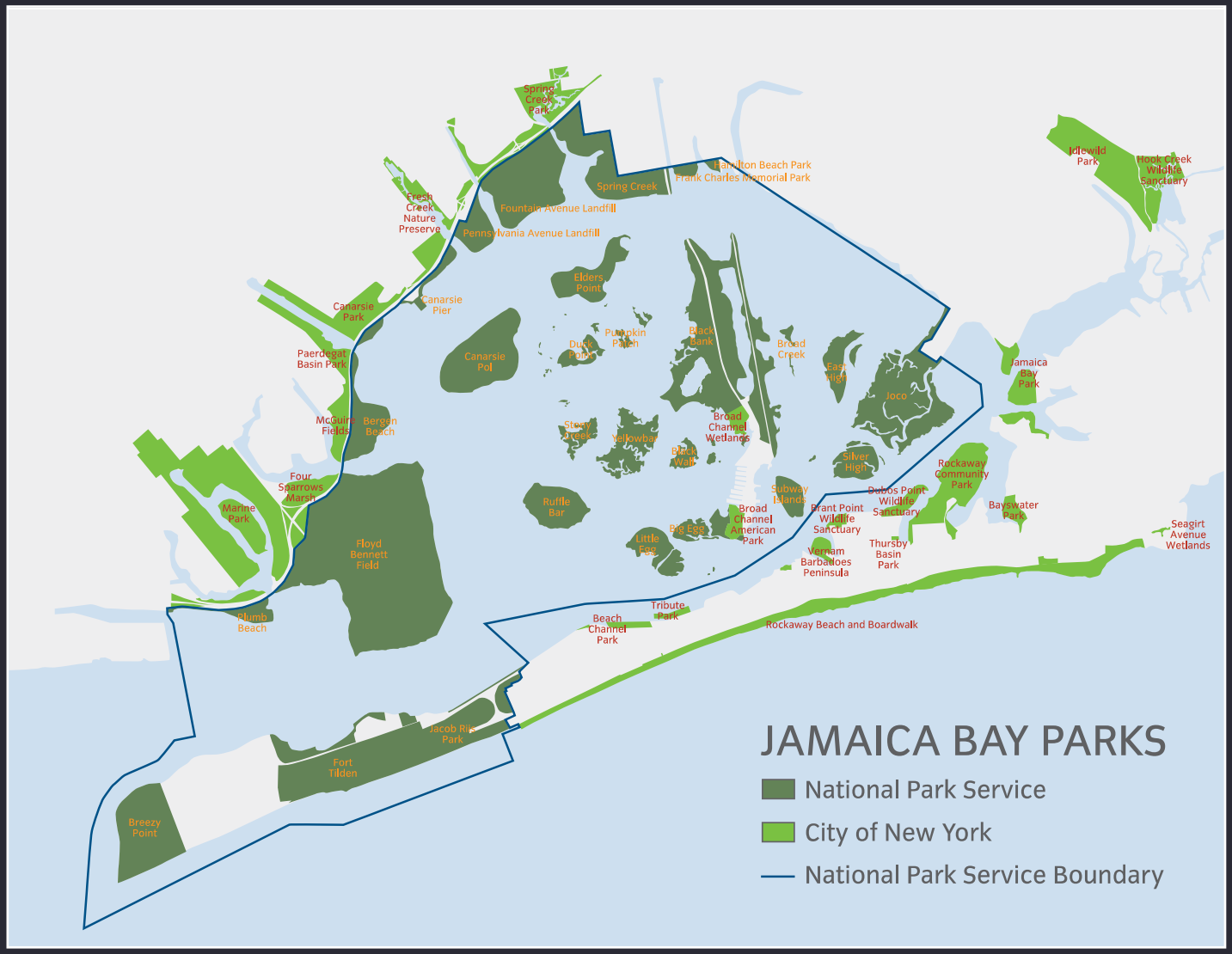
- Follow-up interviews show:
  - Excluding voting and religious activities, stewardship was their initial foray into civic activities
  - There is a reciprocal relationship between stewardship and civic engagement
  - Those who were active stewards for longer have also been more civically engaged for longer

# Socio-Cultural Ecosystem Services

# Reading the Jamaica Bay Landscape

- Who uses green spaces and how?
- Who does not use green spaces and *why not?*
- What are the functions and values of green spaces as conveyed through people's *behaviors*, *description*, and *narratives*?

# Study area: green space surrounding Jamaica Bay




Source: http://www.nycgovparks.org/

# Field work

Data Collection in the Field:

- **Observing** activity
- **Writing** field notes
- **Interviewing** community members
- **Photographing** sights and activities
- **Mapping** observations and encounters

# Method: Structured Protocol

**NEIGHBORHOOD OSERVATION**

| Name<br>Team: | Date<br>(MM/DD/YYYY): | Start<br>Time: | Stop<br>Time: | First Photo #: |
|---|---|---|---|---|
| Location ID:<br>Starting Intersection: | Weather<br>Temperature: | | | Last Photo#: |

| DIRECT HUMAN OBSERVATION | # Kids (<18) | # Adults (18-65) | # Seniors (>65) |
|---|---|---|---|
| **Sports**<br>(soccer, tennis, cricket, baseball, volleyball, football, Frisbee, playground use, etc.) | | | |
| **Jogging / Running** | | | |
| **Nature recreation**<br>(birding, launching or landing boat, fishing, etc.) | | | |
| **Bicycling** | | | |
| **Walking / Dog Walking** | | | |
| **Socializing in Place**<br>(people talking, barbecuing, party, in groups) | | | |
| **Educational Group / Tour** | | | |
| **Working**<br>(vendor, local business, utility, repair, building, re-building) | | | |
| **Plant collection / Foraging / Gathering** | | | |
| **Stewardship**<br>(gardening, tree care, weeding, trash removal, watering, mulching) | | | |
| **Sitting / Resting / Standing / Waiting / Keeping Watch**<br>(alone, not socializing) | | | |
| **Other activity**<br>(homeless person sleeping, musician on street) | | | |
| **Encounter with Resident: positive greeting**<br>(hello, wave, including on cars and in homes) | | | |
| **Encounter with Resident: negative comment**<br>(including on cars and in homes) | | | |

| SOCIAL OBSERVATION | |
|---|---|
| **# of pairs** | |
| **# of small groups (3-10)** | |
| **# of large groups (10+)** | |

**Other Field Notes:**

3 PROTOCOLS:

- Direct human observation
- Signs of human use
- Interview

LOCATION STUDIED:

- Parks interior
- Parks edge

MULTIPLE VISITS

- Weekday
- Weekend
- Evening

# Direct human observation

# Signs of human use

# Zone delineation

# Core themes

- Parks are heterogeneous
- Connectivity
- Parks are contentious spaces
- “Mad love” for parks
- An informal parks economy
- The public engineers
- Everyday ecology
- Parks are a refuge
- Edge effect

# Connecting to Ecosystem Services

**Provisioning**

**Regulating**

**Habitat / Supporting**

**Cultural**

## Knowns and unknowns for science and practice

- *Greater consensus:* shade, local air temperature, water quality, enhanced real estate value
- *Debated or context-dependent*: air quality, asthma linkage, carbon sequestration
- *Less understood:* socio-cultural benefits

# Conclusion:
# Living in the urban forest

# Acknowledgements


- Funding provided by the USDA Forest Service, National Science Foundation ULTRA-Ex grant (DEB-0948451), Mayors Fund for the City of New York, Natural Areas Conservancy

- Co-authors:
  - Erika Svendsen, Gillian Baine, Nancy Falxa-Raymond, Forest Service / NYC Urban Field Station
  - Dana Fisher, University of Maryland
  - James Connolly, Northeastern University

- Social and Site Assessment Collaborators:
  - Joana Chan, Jet Richardson, Khyati Saraf, Colin MacFadyen, Bryce Dubois, Field Researchers
  - David Maddox, Sound Science
  - Bram Gunther, Jennifer Greenfeld, Rachel Charow, NYC Dept of Parks and Recreation
  - Sarah Charlap-Powers, Helen Forgione, Sarah Bendit, Natural Areas Conservancy
  - Jamaica Bay Restoration Corps

Thank you!

- www.nrs.fs.fed.us/nyc