The Urban Ecosystem: A Perspective from USDA

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Regional Approaches to Urban Sustainability: A Focus on Portland
Portland, OR

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Why are we here?

- New emphasis on the greater **urban ecosystems**
- Recognition for *sustainable cities*
- Bringing science disciplines together…*socioecology*
- **Breaking down silos** in governance and management
- **Market-based** solutions
- Valuing the **green infrastructure**
- Emergence of **"stewardship"** as a focus by civil society

What is USDA doing?

- **Research in urban ecosystems – *e.g Baltimore LTER***
  - *Linking the ecological and societal disciplines*
- Developing decision tools – *iTree*
- Rethinking agricultural systems – *maturation from community gardens for subsistence to a new meaning of "local"*
- Reconnecting rural to urban – *the Urban Waters Partnership*

Urban Research at USDA

FOREST INVENTORY AND MANAGEMENT

ECOSYSTEM SERVICES

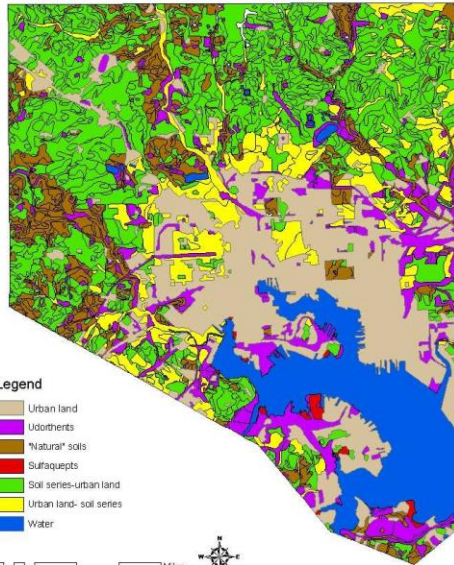HUMAN HEALTH AND WELL-BEING

URBAN SUSTAINABILITY

GREEN INFRASTRUCTURE

WATER AND WATERSHEDS

URBAN LONG-TERM RESEARCH

Urban Soil Research

Soils of Baltimore City

Legend
- Urban land
- Udorthents
- "Natural" soils
- Sulfaquepts
- Soil series-urban land
- Urban land- soil series
- Water

0 0.45 0.9   1.8   2.7   3.6 Miles

United States Department of Agriculture

NRCS Natural Resources Conservation Service

FOREST SERVICE
U S
DEPARTMENT OF AGRICULTURE

What is USDA doing?

- **Research in urban ecosystems –** *e.g Baltimore LTER*
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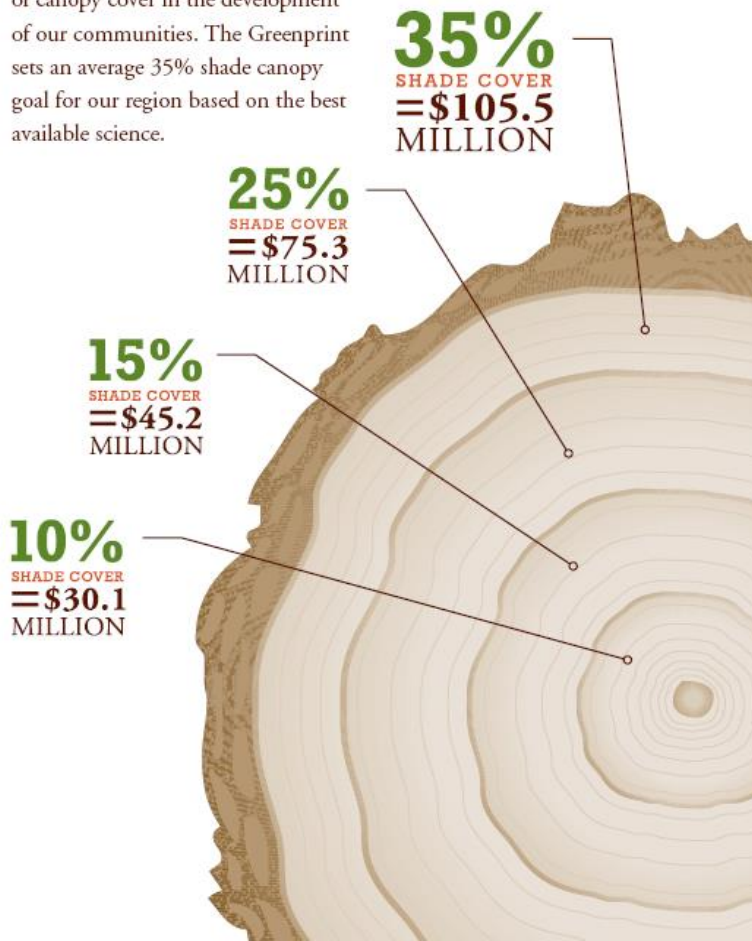# A Cooperative Partnership

i-Tree Goals

Optimal management of urban natural resources to improve environmental quality and human health and well-being

🌲 Single, united application

  ✓ What to plant

  ✓ Where to plant

  ✓ How much (and when) to plant

  ✓ Sustainable forests with optimal

    benefits

SHADE COVER ADDS VALUE TO OUR REGION

Building an urban forest agenda begins by recognizing the pivotal role of canopy cover in the development of our communities. The Greenprint sets an average 35% shade canopy goal for our region based on the best available science.
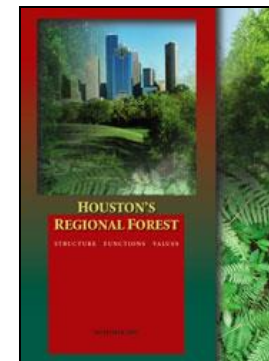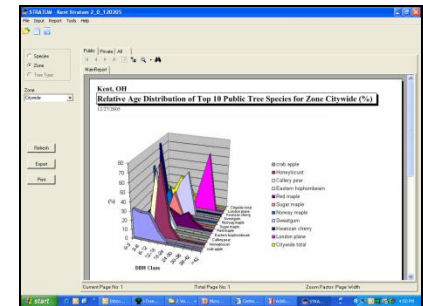
35% SHADE COVER = **$105.5 MILLION**

25% SHADE COVER = **$75.3 MILLION**

15% SHADE COVER = **$45.2 MILLION**

10% SHADE COVER = **$30.1 MILLION**

What's Included?

- Two urban forest assessment tools:
  - ✓ Assessing street tree populations
  - ✓ Assessing urban ecosystems
- Multiple Utilities:
  - ✓ Data collection & transfer
  - ✓ Inventory management
  - ✓ Storm damage assessment
  - ✓ Functional Species Selector

i-Tree Models Have Been Used In Many Cities To Justify Major Tree Planting Programs

- New York City recently developed a long-range plan to plant a million trees over the next 10 years as part of a public/private partnership.

- Both the UFORE and STRATUM i-Tree models were used to develop cost and benefit data.

- In April, 2009, Sec. of Ag. Tom Vilsack, Forest Service Chief Kimbell, and Mayor Bloomberg announced a $2 million dollar federal grant to create green jobs as part of the NYC million tree campaign
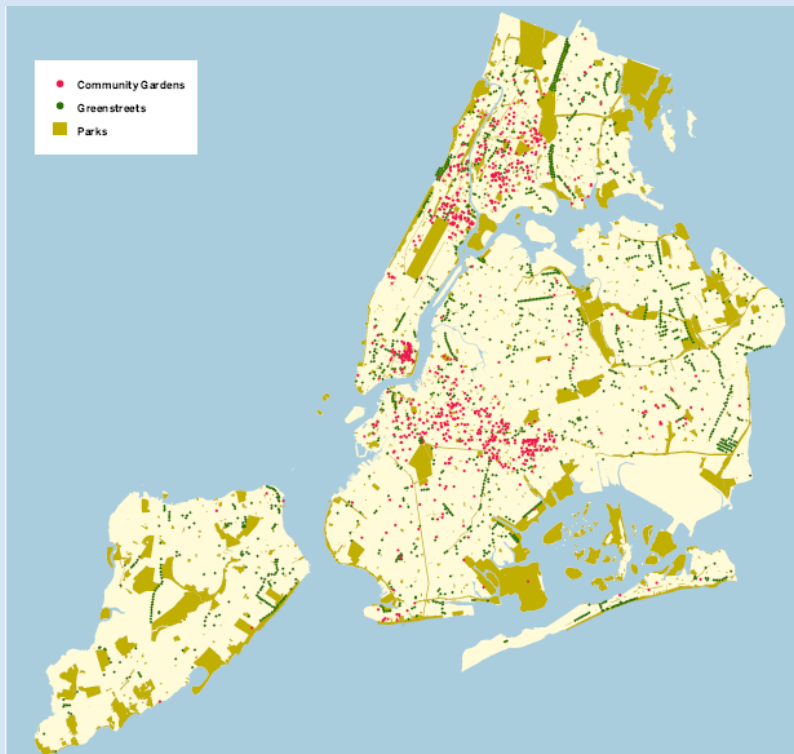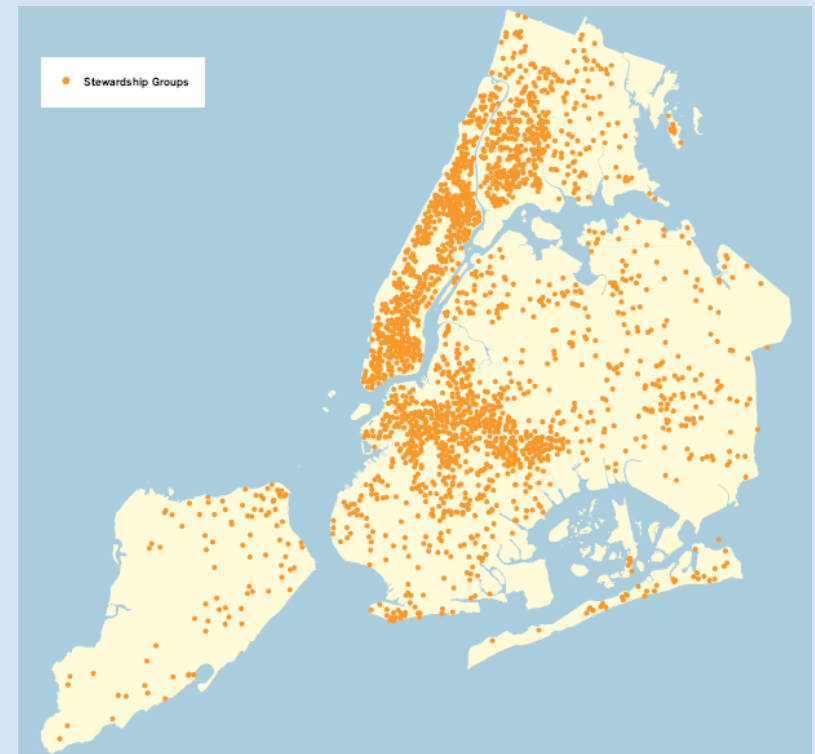
STEW-MAP: How do we understand the social and spatial interactions among actors working on urban stewardship?
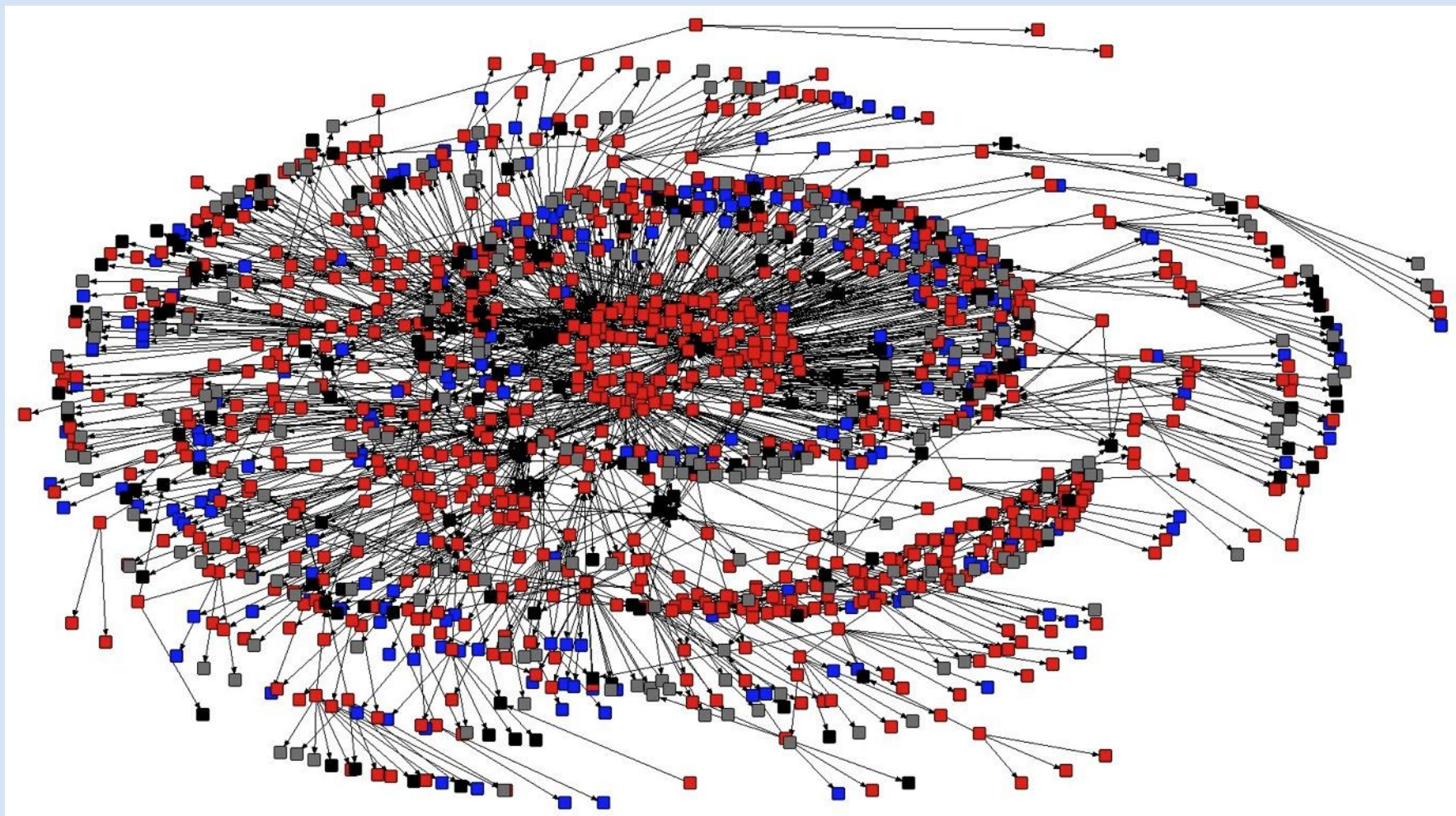
Green Space

Social Space

Stewardship Networks

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Milan's Vertical Forest: The Bosco Verticale

The Bosco Verticale is a system that optimizes, recuperates, and produces energy.

Covered in plant life, the building aids in balancing the microclimate and in filtering the dust particles contained in the urban environment.

All photos: Marco Garofalo for Boeri Studio

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- **Reconnecting rural to urban** – *the Urban Waters Partnership - → Green-Duwamish watershed near Seattle and salmon recovery*

What's Next?

Incorporating environmental stewardship into community engagement

- Groups that:
  - Conserve
  - Manage
  - Monitor
  - Advocate for and
  - Educate their

  friends, neighbors, and representatives about their local environments (including water, land, air, waste, toxics, and energy issues).

ULTRA-Ex

Urban Long-Term Research Area (Exploratory)

- **NSF/USFS joint funding**

- **Focus: research on dynamic interactions between people and natural ecosystems in urban settings in ways that will advance both fundamental and applied knowledge.**

- **Funding for 21 sites**

    - **Funding started in 2009 or 2010**

    - **Grant duration: 2 years**

    - **Size of grants: $59K to $300K**

    - **Average grant: $258K**

ULTRA-Ex Locations

- **15 east of Mississippi R.**

- **6 west of Mississippi R.**

- **Most are place-based studies**

- **A few are gradient or regional studies (e.g. Southwest Gradient and Syracuse-Rust Belt)**

Funded ULTRA-Ex Locations