

# Urban Forests

trees, forests, management, health, and services

TreeKeeper Training  
Trees Atlanta Kendeda Center  
August 15, 2009

Dudley R. Hartel, Center Manager  
Urban Forestry South  
Athens, GA

Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---

## Presentation Objectives

- Understand the concept of urban forestry & urban forest management
- Understand the environmental services that urban forests provide in urban settings
- Look at Atlanta's tree canopy – Identify threats & stressors
- Understand how urban environments affect trees

Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---

## Presentation Agenda

- The setting – Piedmont Crescent
- Urban forestry, urban forest management, arboriculture
- Essential environmental services
- Tree canopy, threats, and stressors
- Healthy trees in urban settings – the basics

Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---

## Piedmont Crescent

- 2007-2008 regional study
  - American Forests
  - [http://www.youtube.com/watch?v=r6p\\_f6lOeDY](http://www.youtube.com/watch?v=r6p_f6lOeDY)
- Concepts
  - Human Network
    - Migration
  - Transportation
  - Gray & Green Co-existence

Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---

## Urban Forests & Forestry

- Trees – woody plants, single or multiple stem with some minimum size
- Forests – aggregations or collections of trees; may or may not be directly tied to the landscape (e.g. bottomland hardwoods); may or may not be natural; often implies management for wood products

Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---

## Urban Forests & Forestry

- Urban Forests – forests in our urban and developed areas
- UF Management – discipline that sets goals/objectives, assesses the components (inventory), identifies needs, and creates a means for attaining the desired outcomes (product or service related)

Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

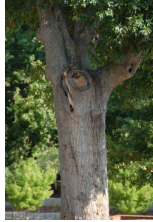
---

---

---

## Urban Forests & Forestry

- Arboriculture - the science and art of caring for trees (culture)
- Urban forestry provides arboriculture with context...
- Arboriculture is the means to urban forestry's ends...



Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---

## Benefits of Trees

- Benefits - usually implies that we are receiving something that we are not entitled to...
- Service – something produced and consumed

Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---

## Environmental Services

- Benefits Listed
  - <http://www.treesatlanta.org/BenefitsofTrees.aspx>
- Environmental
  - Air (carbon)
  - Water (quality and quantity)
  - Soil (erosion, heavy metals, OM)
  - Temperature (health & energy implication)
  - Biodiversity
  - Noise abatement

Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---

## Environmental Services

- Environmental
  - Air (carbon)
  - Water (quality and quantity)
- Social
  - Human interaction (crime, self-esteem)
- Human Health
  - Physical
  - Psychological

Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---

## Tree Canopy

- What's the big deal?
  - Leaves!
- The picture in Atlanta, at the interface, and exurban counties
  - [http://narsal.uqa.edu/atl\\_landcover/landcover.html](http://narsal.uqa.edu/atl_landcover/landcover.html) (1992-2001)
  - <http://narsal.uqa.edu/qlut.html> (1991 - 2005)
  - <http://narsal.uqa.edu/urbancanopy/urbancanopy.php> (1991 - 2001)

Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---

## Tree Canopy

- Tools to monitor the changes
  - Forest
    - Canopy measurement
      - NAIP aeriels; GIS Clearinghouse
    - Leaf Area Index (LAI)
    - Vegetation change
    - Policy
  - Tree
    - Adopt, follow, and encourage *standards*
    - Observe

Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---

## Tree Canopy

### Calculating Canopy

- Define & measure area
  - Select sample points
  - Calculate factor
  - Canopy – Yes/No
  - Do the math
- 
- Percent canopy



Dudley R. Hartel

TreeKeeper Training

---

---

---

---

---

---

---

---

## Tree Canopy

### Calculating Canopy

- **Define & measure area**
  - Select sample points
  - Calculate factor
  - Canopy – Yes/No
  - Do the math
- 
- Percent canopy



Dudley R. Hartel

TreeKeeper Training

---

---

---

---

---

---

---

---

## Tree Canopy

### Calculating Canopy

- Define & measure area
  - **Select sample points**
  - Calculate factor
  - Canopy – Yes/No
  - Do the math
- 
- Percent canopy



Dudley R. Hartel

TreeKeeper Training

---

---

---

---

---

---

---

---

## Tree Canopy

### Calculating Canopy

- Define & measure area
- Select sample points
- Calculate base
  - 190 points
- Canopy – Yes/No
- Do the math
  
- Percent canopy



Dudley R. Hartel

TreeKeeper Training

---

---

---

---

---

---

---

---

## Tree Canopy

### Calculating Canopy

- Define & measure area
- Select sample points
- Calculate base
  - 190 points
- Canopy – Yes/No
- Do the math
  
- Percent canopy
  - 63 canopy points of 190
  - $63/190 = 33\%$  canopy



Dudley R. Hartel

TreeKeeper Training

---

---

---

---

---

---

---

---

## Healthy Trees

- An urban forester's quest!
  - Healthy trees = maximum services
  - Strive for efficiency of effort & economics
  
- In urban areas, intervention
  - Replace natural cycles (nutrient, water, OM)
  - Protect
  - Regenerate
  - Manage risk



Dudley R. Hartel

TreeKeeper Training

---

---

---

---

---

---

---

---

## The Urban Setting

- Soil
  - Structure
  - Compaction
  - Contamination
  - Fertility
- Planting Environment (the site)
  - Restrictions (infrastructure)
  - Drainage
- Physical
  - Damage (construction, other)
- Change
  - Constant

Dudley R. Hartel

TreeKeeper Training




---

---

---

---

---

---

---

---

---

---

## Healthy Trees

Dr. Ed Gilman University of Florida <http://hort.ifas.ufl.edu/woody/>

1. Site Evaluation
2. Species Selection
3. Tree Selection at Nursery
4. Planting
5. First Year Care
6. Annual Care
7. Young Tree Structural Pruning
8. Mature Tree Care



Dudley R. Hartel

TreeKeeper Training




---

---

---

---

---

---

---

---

---

---

## Healthy Trees

Dr. Ed Gilman University of Florida <http://hort.ifas.ufl.edu/woody/>



Dudley R. Hartel

TreeKeeper Training




---

---

---

---

---

---

---

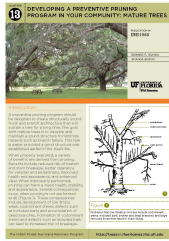
---

---

---

# Healthy Trees

Dr. Ed Gilman University of Florida <http://hort.ifas.ufl.edu/woody/>



Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---

# Discussion

Dudley R. Hartel, Center Manager

(706) 559-4236 voice  
(706) 410-5568 cell  
dhartel@fs.fed.us

[www.UrbanForestrySouth.org](http://www.UrbanForestrySouth.org)

[www.UFST.org](http://www.UFST.org)

[www.UrbanTreePhenology.org](http://www.UrbanTreePhenology.org)

[www.FirePerformancePlantSelector.org](http://www.FirePerformancePlantSelector.org)

Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---

# Urban Forests

Dudley R. Hartel, Center Manager  
Urban Forestry South  
320 Green St  
Athens, GA 30602

(706) 559-4236 voice  
(706) 410-5568 cell  
dhartel@fs.fed.us

[www.UrbanForestrySouth.org](http://www.UrbanForestrySouth.org)

Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---





Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---



Dudley R. Hartel

TreeKeeper Training



---

---

---

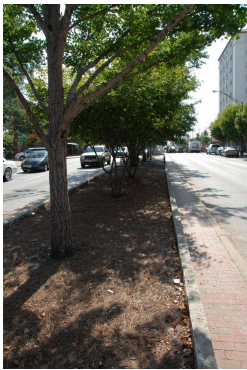
---

---

---

---

---



Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---



Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---



Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---



Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---



Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---



Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---



Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---



Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---



Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---



Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---



Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---



Dudley R. Hartel

TreeKeeper Training



---

---

---

---

---

---

---

---