Advanced Master Gardeners
Utah State University

2005
The Quest Continues
Woody Plants
Trees, Shrubs and Vines
1. Welcome

Visualize a highway map.

Imagine a utility grid of lines and routes and easements.

Picture the blue lines of landscape architects.

Now consider what an aerial view reveals that is normally missed in traditional views.

The trees.

Images for animation courtesy AMERICAN FORESTS
2. New Thinking

Urban forestry is such a new concept, when USA Today did a story on it, they put the term in quotes.

For years, trees in cities in towns were only judged on looks.

Thanks to science, that is changing.
3. The Value of Shade

Our first two before-and-after pictures feature parking lots.

Studies show that some cars give off more pollution when parked on a hot lot than when running.

We’ll get to that in detail a little later.
5. It’s About More Than Just Being Pretty

There are measurable scientific and economic benefits at stake.

Trees:

- increase property value
- boost retail traffic
- mitigate storm-water runoff
- scrub air pollution
- provide energy-saving cover

Photos: Trees Atlanta
Let’s clearly define our subject.

Urban and community forestry coordinates the management of

• Individual trees
• Forests
• Green open spaces
• Riparian zones
• And other natural ecosystems

in the places where people live, work and play.

Photos: Trees Atlanta
7. The Challenges

We must reduce tree loss in new development.

We must take care of existing trees.

We must plant new trees in environments where they would not normally grow on their own.
4. Before or After?

In some cases, these pictures are reversed. It’s not trees being planted, it’s trees being cut down.

Many a good forestry project has involved cutting down hazard trees and replanting appropriately suitable ones.

Photos: Trees Atlanta
8. The Role of Technology

Urban and community forestry progressed from tree-hugging to real science thanks to advances in technology.

Benefits are no longer measured in feel-good politics. They are measured in cold hard cash.

Photos: AMERICAN FORESTS
9. The View From Above

These satellite images need no scientist to interpret. The green area is forest cover. The black is urban development.

In these pictures, the population doubled but the urban mass quadrupled. The area under tree cover dropped from 57 to 30 percent.

Photos: AMERICAN FORESTS
10. So What Happens When the Trees Are Gone?

Trees are often replaced by impervious surfaces such as parking lots.

These areas hold more heat than lawns or grassy fields, and are called “heat islands” by scientists.

Urban areas tend to be two to eight degrees warmer than surrounding countryside.
11. A Nationwide Phenomena

Note the tree loss in these pictures. Then ask yourself why the Chesapeake Bay clean-up initiatives of the ‘80s have not been as effective as hoped.

Photos: AMERICAN FORESTS
12. A Dramatic Example

Look at this example of the Puget Sound area. During this period, the salmon population declined.
13. Is This Street in Your Town?

Over the next five slides, we’ll look at five specific benefits.

To put it another way, we can list the reasons on one hand.
14. Property Values

In residential real estate, studies show that all things being equal (square footage, number of bathrooms, etc.) trees boost the total value by a minimum of six percent.

In commercial real estate, a Weyerhauser survey showed 86 percent of appraisers believe that trees add value.
15. Retail

Shoppers linger when it comes to pleasant, tree-lined environments.

A University of Washington study found that people routinely paid 10 percent more to shop in those areas.

In commercial real estate, the higher the level of greenery, the lower the vacancy rate.
16. Trees vs. Storm Sewers

Rain not absorbed by trees or greenery has to go somewhere. On an no-seep surface, it takes off running -- and carries with it all the trash and oils and junk it can carry.

Greenery protects bodies of water from runoff and its associated pollutants.
Trees trap airborne particulates and reduce carbon dioxide, two risk factors in asthma.

People with asthma experience more than 100 million days of restricted activity each year.

Health costs for asthmatics exceed $4 billion yearly.

An estimated 4,000 people die of asthma-related causes each year.
Researchers looked at two Florida cities, one with a typical tree approach and one with a comprehensive urban forest plan.

Homes in the tree-friendly city spent $126 less each year in heating and cooling.

Similar or better results have shown up in study after study.
19. Call It “Green Infrastructure”

Planners and local officials are used to seeing road maps and utility grids and plot surveys.

If we call those items gray infrastructure, it is our job to underline the importance of the green infrastructure.

Scientists say whenever possible, build ribbons of greenery that are connected. That's much better for the plants and wildlife.
20. So What’s the Holdup?

It’s a fair question -- if the benefits are so clear, why is change still slow? To put it in four words:

- Awareness
- Complexity
- Costs
- Maintenance
21. Awareness

There’s more to urban forestry than public parks.

We must look at all land...

private homes
condos
apartments
commercial
retail zones
utility rights of way

... even places like the areas around railroad lines or highways.

Help Fill Our Streets With Shady Characters.

Here's a cause you can really root for. It's Trees For Houston, a 501(c)3 nonprofit organization in planting trees near Houston's freeways, along major streets and throughout our neighborhoods. But money doesn't grow on trees, so we need your support to keep planting. With your tax-deductible donation, we can continue to beautify our city while creating a healthier environment. So please, shake with a few greenbacks to make Houston more beautiful. Send your donation to Trees For Houston, Box 11096, Houston, TX 77219-3096. Or call 713-865-TREE. Soon, we'll have it made in the...
22. Complexity

<table>
<thead>
<tr>
<th>Parks</th>
<th>The list at left translates into an amazing number of potential players—politicians, citizen groups that can range from environmental activists to churches or garden clubs, government agencies in a variety of flavors, utility companies, private businesses, the nursery industry.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Streets</td>
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<tr>
<td>Private Homes</td>
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<tr>
<td>Condos</td>
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<td>Apartments</td>
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<td>Utility Rights of Way</td>
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<tr>
<td>Highway Interchanges</td>
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<tr>
<td>River Banks</td>
<td></td>
</tr>
<tr>
<td>Railroad Easements</td>
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</tbody>
</table>
23. Costs

The factors and outcomes are all related.

The jurisdictions and economics are all different.

Urban foresters have a lot to coordinate.
24. Maintenance

Most urban trees live only seven to 10 years.

Two common problems.

Insufficient maintenance budgets.

Inadequate planting spaces.
25. The Good News Is...

...you are not the first people facing these issues.

Urban forestry programs often need citizen groups and non-profit organizations when it comes time to deliver.

Tree-planting volunteers are not hard to find or organize.
26. Feel-good Facts

Crime is lower in tree-lined neighborhoods.

One acre of woods will essentially scrub the pollution of a two-car family driving for a year.

In a classic hospital study, patients with a forest view healed faster than patients who saw a brick wall.

Middle school volunteer tree planting, Martinsville, VA. (Photo courtesy Gateway Streetscapes Foundation)
27. Feel-good Facts II

Greener settings lead to more creative play in children and help mitigate symptoms of Attention Deficit Disorder.

Trees lower violence in public housing. Trees lower levels of domestic violence. Trees lower the level of violence with prison inmates.

New research suggests a link between the amount of shade and the frequency of skin cancer.
28. The Benefits of Recreational Enhancements

Rails-to-trails and other greenway projects often carry a side benefit -- the connectivity of wildlife habitats. And never forget that the end result of many urban forestry projects is an enhanced quality of life.

At left, photo courtesy Roanoke Greenways Commission. At right, Page County (VA) Tree Board
A mature tree produces far more environmental benefits than a young one, and a lush cover of tree canopy produces the best benefits of all.

Images for animation courtesy AMERICAN FORESTS
30. Trees Need Space and Soil

When it comes to creating the wonderful, big old tree of the future, make sure you plant the right tree in the right spot.

In some urban areas, the best tree is one that won’t grow up and make a mess of the sidewalk or power lines.

Photos: Tree Stewards of Lynchburg, VA., www.urbanforeSTRYsouRth.org
On average, 20 to 30 percent of all urban space is covered by parking lots.

Sixteen percent of all pollution from cars comes from when they are parked.

Parking lot shade trees are an inexpensive way for cities to address ozone and pollution standards.
32. How Much Canopy is Needed?

According to generally accepted best management practices, an average of 40 percent canopy is the goal.

We work with an average because we must deal with four distinct environments:

• Urban Core
• Old Suburbs
• New Suburbs
• Old Commercial
33. Urban Core

Trees need space both above and below ground. Finding the right tree for the right spot minimizes infrastructure conflicts.

Newly planted trees need water and protection from man-made hazards.

Coordination is needed in terms of providing adequate tree cover on both private and public property.

Trees should also be selected with ecology in mind – selected and placed to maximize their benefits.

Illustration: Georgia Forestry Commission
34. Old Suburbs

Some experts suggest requiring tree planting when approving plans to remodel homes as a way to sustain tree cover.

Existing trees can be preserved by allowing greater flexibility in set-back requirements.

Arbor Day is a wonderful example of using public awareness campaigns to promote tree planting among private homeowners.
35. New Suburbs

Ways must be implemented to reduce tree loss in new construction.

Some jurisdictions have inserted tree canopy provisions into zoning requirements.

Freeway off-ramps can be planted in trees as opposed to high-maintenance grasslands.
36. Old Commercial Districts

In the past, business owners have been concerned with obscuring store windows, losing parking spaces, or dealing with falling leaves or bird droppings.

Fortunately, careful planning, careful pruning and well-thought-out tree selection can minimize those issues.
37. Which Brings Us to Two Old Sayings

The best time to plant a tree is 20 years ago. The second best time is now.

To plant a $5 tree, start with a $10 hole.
38. Dream

We’ve talked a great deal today about the economic benefits of trees.

Please never underestimate the pure inspirational value of trees.
39. Survivor Tree

Among the survivors of the Oklahoma City terrorist bombing was this elm. When the memorial park was designed and built, preserving and including this tree was made a top priority.
40. Thanks

Our goal for today has been to literally make you look at your world differently.

Think about this as you drive home tonight on a nice tree-lined street.

How will those trees will be maintained or replaced?

If not you, who?

If not now, when?
... Supplemental Materials

How Much Money?
Typical Budget Items
Planting Tips (Basic)
Planting Tips (Advanced)
Tips For Volunteers
Success Stories (Virginia)
Success Stories (Little Rock)
Urban Forestry Then And Now
Special Thanks

Photo: Texas Department of Forestry
... How Much Money?

Various organizations suggest $2 to $3 per capita as a minimum.

The great tree cities spend more.

Savannah, Georgia, with its 50+ percent cover, spent more than $10 per capita in FY2000.
... Typical Budget Items

Professional Staff
Tree Removals
Tree Pruning
Mulching
Fertilization
Community Education
Tree Ordinance Enforcement
Tree Planting
... Planting Tips

Start with soil testing
First look for healthy existing plants instead of stunted or discolored. Proceed to sophisticated tests from there.

Check drainage
Too many trees die from roots drowning in water. In a hole one foot wide and one foot deep, filled with water, you need drainage between one and three inches per hour.

Water is crucial
When watering in new trees, a 30-gallon trash can will water two new large trees.
... Then And Now

- **Urban Forestry Then:**
  - Primarily concerned with street tree and park tree management. Based on aesthetics, and not recognized in many circles as a discipline.

- **Urban Forestry Now:**
  - Urban forestry is including new issues: sprawl versus smart growth, environmental quality, open space preservation
  - Urban forestry is expanding its constituency: urban and regional planners, civil engineers, public health officials, citizen activists, political leaders

Abingdon, Va. tree replacement project
Community Trees, Vital to Community Health

- Tree-filled Neighborhoods Lower levels of domestic violence
Trees sell houses. (At higher prices.)

Each large front landscape tree adds 1% to sales price
Trees sell houses. (At higher prices.)

- Large specimen trees can add 10%, or more, to property values.
### Save Your Community Thousands...

100 Trees Over 40 Years...

<table>
<thead>
<tr>
<th>Typical Benefits</th>
<th>Typical Costs</th>
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<tbody>
<tr>
<td>Energy $43,000</td>
<td>Planting $21,000</td>
</tr>
<tr>
<td>CO$_2$ 9,000</td>
<td>Pruning 37,000</td>
</tr>
<tr>
<td>Air Quality 9,000</td>
<td>Removal/disposal 8,000</td>
</tr>
<tr>
<td>Runoff 46,000</td>
<td>Irrigation 6,000</td>
</tr>
<tr>
<td>Aesthetic 118,000</td>
<td>Sidewalk repair 1,000</td>
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<tr>
<td><strong>Total $225,000</strong></td>
<td>Litter 3,000</td>
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<tr>
<td></td>
<td>Legal 6,000</td>
</tr>
<tr>
<td></td>
<td>Admin 1,000</td>
</tr>
</tbody>
</table>

**Total $83,000**
Make Your Community Thousands...

270% Return on Investment

In 40 years, the average tree returns $2.70 in benefits for every $1 of community investment...
Plant trees. Create a legacy.

Liberty Park, Salt Lake City
Trees

• Did you know?
  * Trees growing in urban settings live 13 yrs. on the average
Trees

Did you know?

* Trees in residential neighborhoods average 37 yrs.
Trees

• Did you know?
  * Trees in rural, undisturbed sites average 150 yrs.
Trees

• Did you know?
  * Some species of trees live longer than others
The Bottom Line...

- Benefits depend on healthy trees
- Healthy trees require quality care
- Quality tree selection and care depends on you
... Special Thanks

Paul Revell, Virginia Department of Forestry
Ed Macie, USDA Forest Service
Ingrid Sather, USDA Forest Service

American Forests
Venturi Technology Partners
Trees in Our Cities and Landscapes

Utah State University Extension Service
Advanced Master Gardeners
... Template

The headlines are in 32 point Georgia.
These bullets are in 18 point Georgia.
Most pictures are sized to be 380 pixels wide.
Create your page here, then use the slide sorter (under View) to insert in your presentation.
... Planting Tips (more)

Cutting pavement, busting it up and hauling it away is a big job. Some cities offer assistance in these matters.

Calling to check for underground utilities 48 hours in advance is mandatory.
... Tips for Handling Volunteers

If you’re planting big trees, figure one tree per volunteer per day.

Always figure out someplace where volunteers can go to a bathroom. Sometimes half-day events can wind up running long.

Always start with a tree planting demo. There’s no reason to plant the tree poorly, and it’s only natural for good-hearted people to say “Oh yeah, I’ve done this before.”
... Virginia Success Stories

**Organizations**
- Roanoke Valley Urban Forest Council
- Fairfax Releaf (this spelling correct)
- Gateway Streetscapes (Martinsville)
- Richmond Shade Tree Commission
- Lexington Tree Committee
- Grassroots Conservancy (Marion)
- Front Royal Tree Committee
- Hoffler Creek Wildlife Refuge
- Rivanna Conservation Society

**Projects**
- Roanoke Valley Greenways
- Virginia Natural Resources Leadership Institute
- Governor’s Conference on Greenways and Trails
- Marion Riverwalk
- Lynchburg Tree Stewards
- Luray Greenway Project

Illustration: Georgia Forestry Commission
The Central High neighborhood, made famous in a 1957 civil rights action, is today home to a successful and long-running forestry project.

Over a 13-year period, hazard trees have been removed and appropriate replacements are being grown.

Photo: Central High Neighborhood, Inc.