
Town of Carrboro
Presents
URBAN TREES!

What are Urban Trees?

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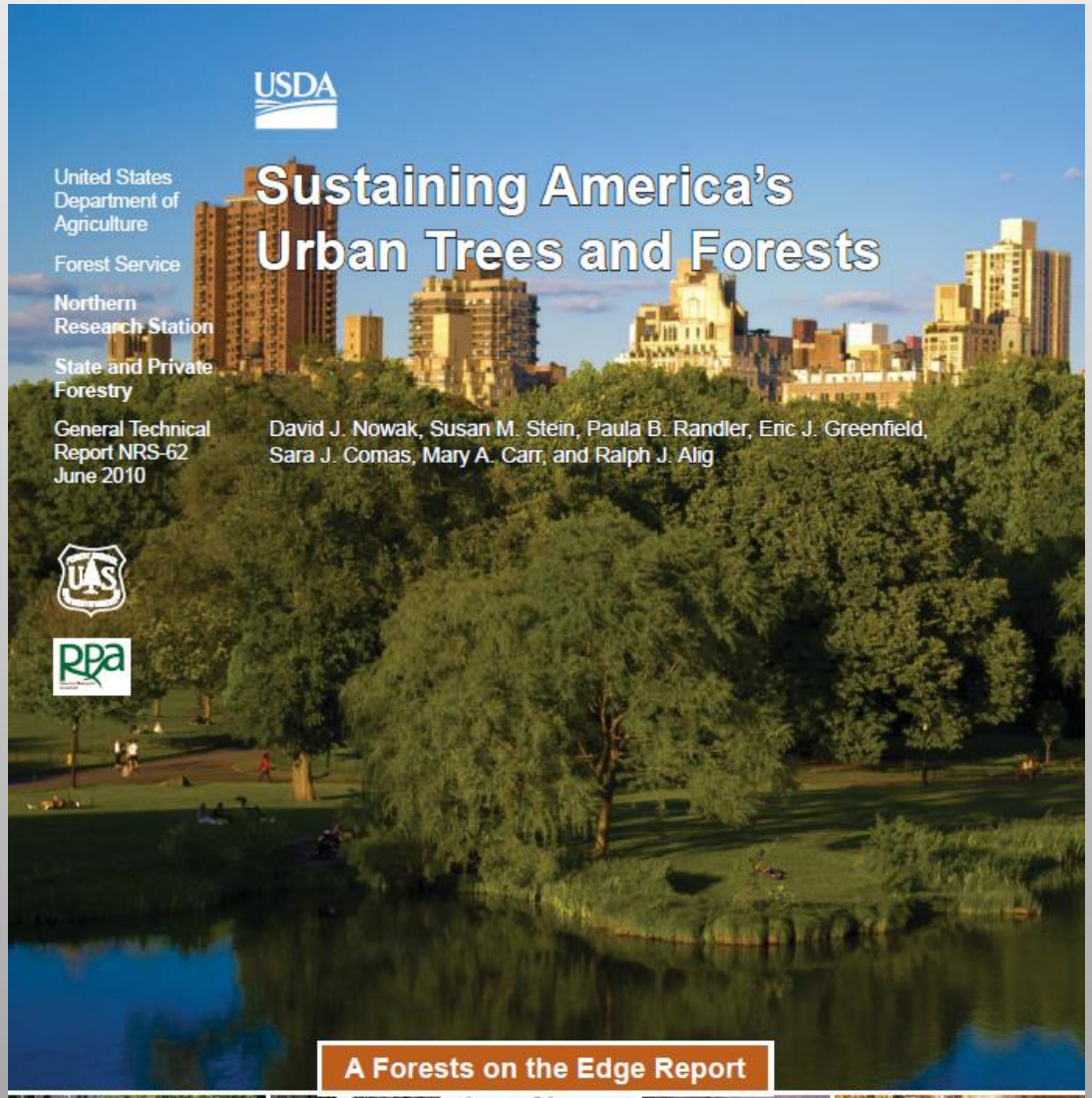
Green Infrastructure?

Green infrastructure uses vegetation, soils, and natural processes to manage water and create healthier urban environments. At the scale of a city or county, green infrastructure refers to the patchwork of natural areas that provides habitat, flood protection, cleaner air, and cleaner water. At the scale of a neighborhood or site, green infrastructure refers to stormwater management systems that mimic nature by soaking up and storing water.

http://water.epa.gov/infrastructure/greeninfrastructure/gi_what.cfm

The Benefits of Urban Trees



USDA

United States Department of Agriculture

Forest Service

Northern Research Station

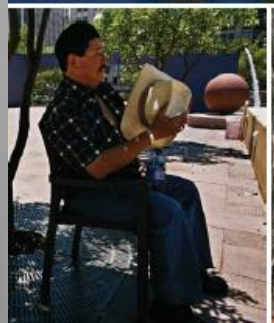
State and Private Forestry

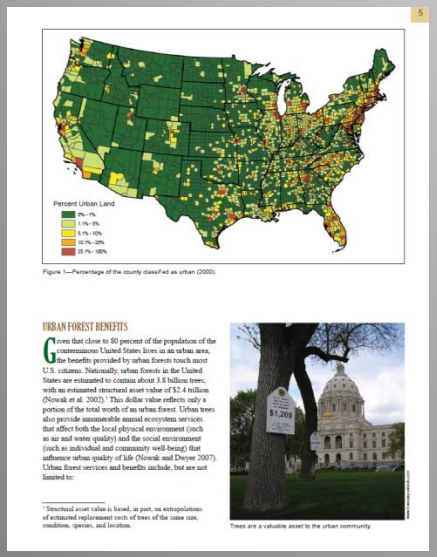
General Technical Report NRS-62
June 2010

Sustaining America's Urban Trees and Forests

David J. Nowak, Susan M. Stein, Paula B. Randler, Eric J. Greenfield, Sara J. Comas, Mary A. Carr, and Ralph J. Alig

A Forests on the Edge Report





• **Local climate and energy use**—Trees influence thermal comfort, energy use, and air quality by providing shade, transpiring moisture, and reducing wind speeds. The establishment of 100 million mature trees around residences in the United States is said to save about $2 billion annually in reduced energy costs (Akbari et al. 1988, 1992; Donovan and Butry 2009).

• **Air quality**—Trees improve air quality by lowering air temperatures, altering emissions from building energy use and other sources, and removing air pollutants through their leaves. Urban trees in the conterminous United States remove some 784,000 tons of air pollution annually, with a value of $3.8 billion (Nowak et al. 2006).

• **Climate change**—Urban trees can affect climate change by directly storing carbon within their tissues and by reducing carbon emissions from power plants through lowered building energy use. Urban trees in the conterminous United States currently store 770 million tons of carbon, valued at $14.3 billion (Nowak and Crane 2002).

• **Water flow and quality**—Trees and soils improve water quality and reduce the need for costly storm water treatment (the removal of harmful substances washed off roads, parking lots, and roofs during rain/snow events), by intercepting and retaining or slowing the flow of precipitation reaching the ground. During an intense storm in Dayton, OH, for example, the tree canopy was estimated to reduce
potential runoff by 7 percent (Sanders 1986).

• **Noise abatement**—Properly designed plantings of trees and shrubs can significantly reduce noise (Anderson et al. 1984). Wide plantings (around 100 ft) of tall dense trees combined with soft ground surfaces can reduce apparent loudness by 50 percent or more (6 to 10 decibels) (Cook 1978).

• **Wildlife and biodiversity**—Urban forests help create and enhance animal and plant habitats and can act as "reservoirs" for endangered species (Howenstine 1993). Urban forest wildlife offer enjoyment to city dwellers (Shaw et al. 1985) and can serve as indicators of local environmental health (VanDruff et al. 1995).

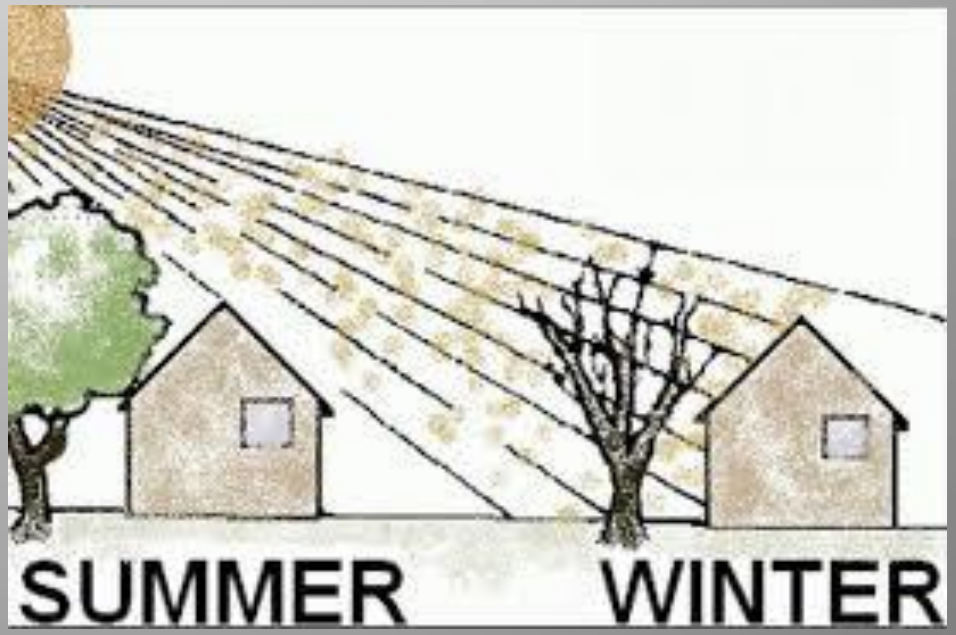
• **Soil quality**—Trees and other plants help remediate soils at landfills and other contaminated sites by absorbing, transforming, and containing a number of contaminants (Westphal and Isebrands 2001).

• **Real estate and business**—Landscaping with trees—in yards, in parks and greenways, along streets, and in shopping centers—can increase property values and commercial benefits (Anderson and Cordell 1988; Corrill et al. 1978; Donovan and Butry 2008; Dwyer et al. 1992; Wolf 2003, 2004). One study found that on average, prices for goods purchased in Seattle were 11 percent higher in landscaped areas than in areas with no trees (Wolf 1998).

• **Individual well-being and public health**—The presence of urban trees and forests can make the urban environment a more aesthetic, pleasant, and emotionally satisfying place in which to live, work, and spend leisure time (Dwyer et al. 1991; Taylor et al. 2001a, 2001b; Ulrich 1984). Urban trees also provide numerous health benefits; for example, tree shade reduces ultraviolet radiation and its associated health problems (Heisler et al. 1995), and hospital patients with window views of trees have been shown to recover faster and with fewer complications than patients without such views (Ulrich 1984).

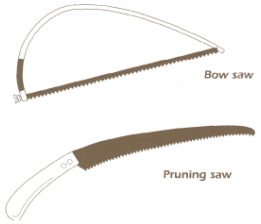
• **Community well-being**—Urban forests make important contributions to the economic vitality and character of a city, neighborhood, or subdivision. Furthermore, a stronger sense of community and empowerment to improve neighborhood conditions in inner cities has been attributed to involvement in urban forestry efforts (Kuo and Sullivan, 2001a, 2001b; Sommer et al. 1994a, 1994b; Westphal 1999, 2003).

What can you do?



What can you do?

Proper Techniques



coarse teeth on the other; these can be difficult to use in densely branched plants.

Bow saws are good only where no obstruction exists for a foot or more above the area to be cut.

Chain saws come in a variety of sizes, both gas and electric. However chain saws are not appropriate for pruning live plant material except for large limbs. They are better suited to tree removal and cutting firewood.

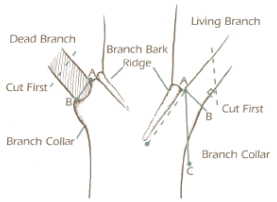
GENERAL PRUNING TECHNIOUES

Twigs and Small Branches

When pruning twigs and small branches, always cut back to a vigorous bud or an intersecting branch. When cutting back to a bud, choose a bud that is pointing in the direction you wish the new growth to take. Be sure not to leave a stub over the bud or cut too close to the bud. When cutting back to an intersecting (lateral) branch, choose a branch that forms an angle of no more than 45 degrees with the branch to be removed.

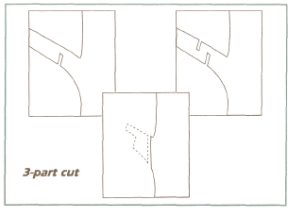
Thick Heavy Branches

Large branches should be removed flush with the collar at the base of the branch, not flush with the trunk. The collar is an area of tissue that contains a chemically protective zone. In the natural decay of a dead branch, the decay advancing downward meets the internal protected zone (an area where very strong wood meets an area of very weak wood). The branch then falls away at this point, leaving a small zone of decayed wood within the collar. The



decay is stopped in the collar. This is the natural shedding process when all goes according to nature's plan. When the collar is removed, the protective zone is removed, causing a more serious trunk wound. Wood-decay fungi can then easily infect the trunk. Even if the pruned branch is living, removal of the collar at the base still causes injury to the tree.

For over half a century, the recommendations for pruning have been to flush-cut and paint. These outdated recommendations have no basis in scientific fact. The flush-cut increases the tree injury, which the paint hides. The paint is primarily cosmetic, a psychological treatment for the person doing the pruning, to show that he or she has done something to "help" the tree. In fact, paints or wound dressings may trap moisture and increase disease problems.

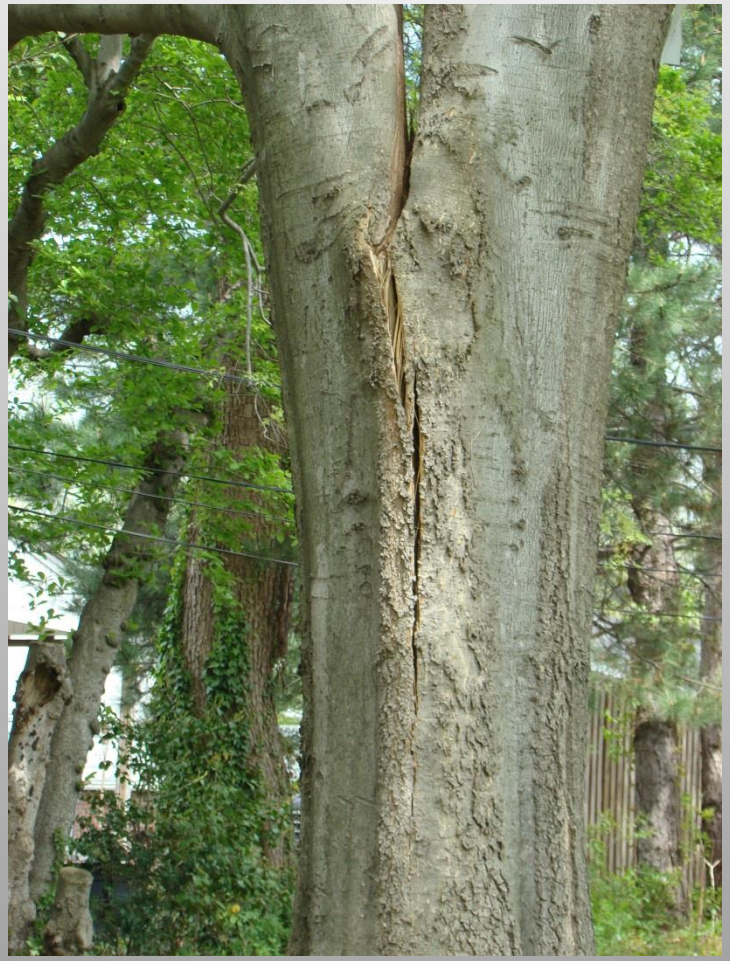


When cutting branches over 1 1/2 inches in diameter, use a 3-part cut. This is accomplished by first sawing the bottom of the branch, 6 to 12 inches out from the trunk and about one-third of the way through the branch. Next, make a second cut from the top, about 3 inches further out from

What can you do?

Problems

Problems



Problems

Problems

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Contractors

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Arborists

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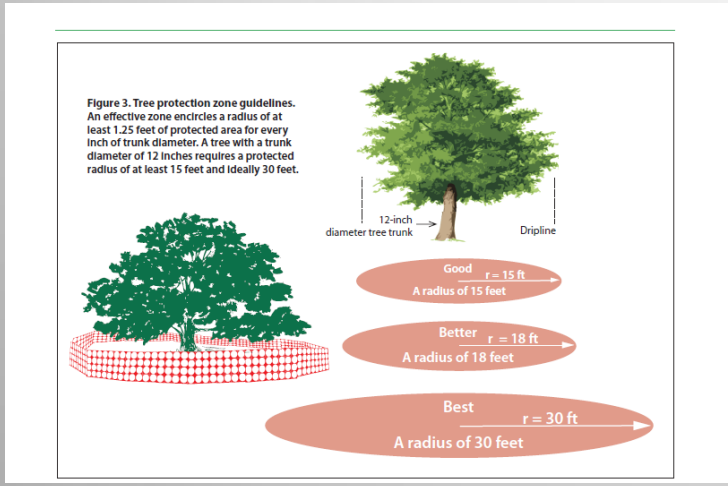
Arborists

Protection during Development



Construction and Tree Protection

Protecting trees during construction can yield big rewards. Planning and prevention are the keys to success. Achieve the best results by taking action to prevent tree damage during site development and construction.

Figure 1. Tree protection zone. A protected zone preserves roots and soil and keeps branches clear of contact with construction equipment and materials.

This publication describes some tree protection strategies that builders and developers can use before, during, and after construction to conserve healthy trees. Community actions to encourage tree protection and reduce the risk of injuring or losing valuable trees are highlighted.

Conserving the right trees can reap rewards for developers, homeowners, and communities. Healthy trees enhance property values and community development by providing shade, wildlife habitat, and beauty. Sickly, stressed trees reduce property values, discourage potential buyers and detract from a community. Post-construction maintenance and removal of trees is difficult and expensive. Replacing trees after construction can also be costly and time consuming.

Before Construction

1. Take stock of trees on the site. Hire a professional arborist or urban forester to inventory existing trees. An inventory records the variety, location, size, and health of each tree. A proper tree inventory creates the foundation for a successful tree protection plan. A professional can identify valuable trees and those that need attention or removal.

Identify any stressed trees that need removal. Stressed, unhealthy trees have wilting leaves, dying limbs, thinning crowns or other signs of declining health. Always remove insect-, disease-, or storm-damaged trees prior to construction. This is fast, efficient, and saves resources.

2. Draw a base map. Include all the important site features such as existing vegetation, property lines, utility connections, slopes, and required setback distances before drawing in the proposed building(s):

- Map grading and drainage.
- Identify priority trees for protection. Mark their locations on the base map and sketch in approximate tree protec-

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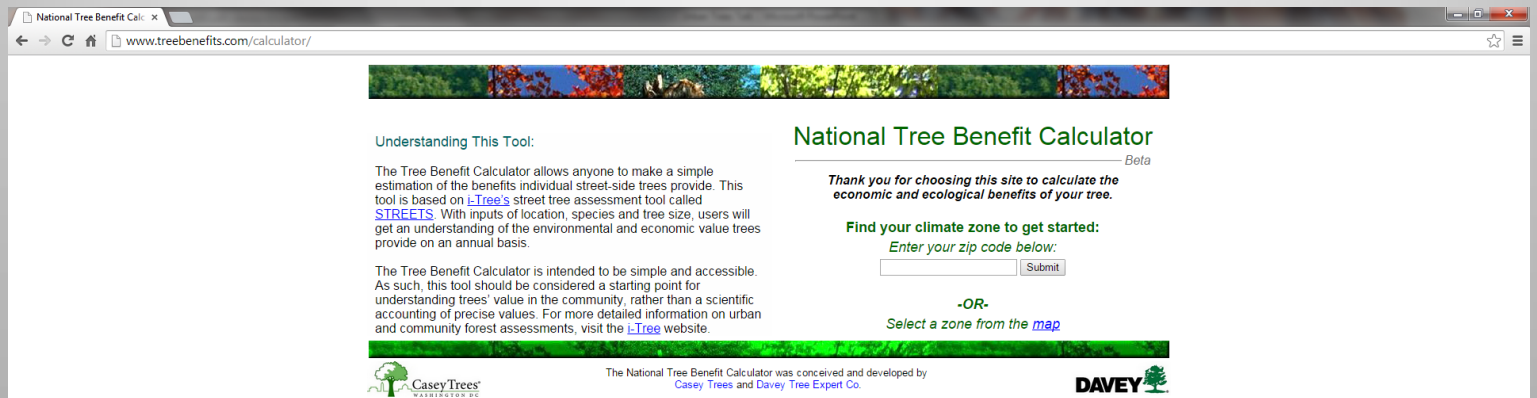
Guidance and Info!

- http://www.isa-arbor.com/home.aspx
- http://www.treesaregood.org/
- http://www.ncufc.org/
- http://www.townofcarrboro.org/123/Public-Works
- http://www.treebenefits.com/calculator/


National Tree Benefit Calc
www.treebenefits.com/calculator/
Understanding This Tool:
The Tree Benefit Calculator allows anyone to make a simple estimation of the benefits individual street-side trees provide. This tool is based on i-Tree's street tree assessment tool called STREETS. With inputs of location, species and tree size, users will get an understanding of the environmental and economic value trees provide on an annual basis.
The Tree Benefit Calculator is intended to be simple and accessible. As such, this tool should be considered a starting point for understanding trees' value in the community, rather than a scientific accounting of precise values. For more detailed information on urban and community forest assessments, visit the i-Tree website.
National Tree Benefit Calculator
Beta
Thank you for choosing this site to calculate the economic and ecological benefits of your tree.
Find your climate zone to get started:
Enter your zip code below:
Submit
-OR-
Select a zone from the map
Casey Trees
WASHINGTON DC
The National Tree Benefit Calculator was conceived and developed by
Casey Trees and Davey Tree Expert Co.
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