

# Benefits of Urban Trees



*Urban and  
Community  
Forestry:  
Improving Our  
Quality  
Of Life*



United States  
Department of  
Agriculture  
Southern Region

*I think  
that I shall  
never see  
a poem  
lovely as a tree.*

These words by American poet Joyce Kilmer capture the love most people share for trees. This sentiment may be especially appropriate in urban areas where trees are particularly noticeable and play critical roles in the quality of life. Trees are also major capital assets in our cities and towns – as much an integral part of the scene as streets, sidewalks, and buildings -- they represent a major component of the "green infrastructure."





# WHAT TREES DO

Trees are not only beautiful in themselves but add beauty to their surroundings. Trees add color to the urban scene, soften the harsh lines of buildings, screen unsightly views, provide privacy and a sense of solitude and security, while contributing to the general character and sense of place in communities.

Beyond aesthetics and emotional well-being, trees perform important functions that protect and enhance city dwellers' health and property. Trees literally clean the air by absorbing air pollutants and releasing oxygen. They reduce stormwater runoff and erosion; they temper climate; they can save energy; they create wildlife habitat; they can improve health, serve as screens, and strengthen community. They can even help contribute to a community's economy and way of life.





# TREES IMPROVE AIR QUALITY



Air pollution is the bane of most cities and many towns. At its worst, it can be seen and smelled and even felt. Since the emission of many air pollutants increases with higher temperatures, trees can improve air quality by lowering air temperatures. Trees further their cleansing work by absorbing gaseous pollutants into their leaves and trapping and filtering particulates on and through their leaves, stems, and twigs. Trees have the potential to impact pollutants emitted from power plants by shading buildings and lowering air temperatures in the summer and blocking winds in the winter, which reduces the use of energy for air conditioning and heating. If trees shade a parking lot, they can also reduce pollutants emitted from vehicles.

# TREES REDUCE STORMWATER RUNOFF AND EROSION

Trees influence the flow of water in several ways. Their leafy canopy catches precipitation before it reaches the ground, allowing some of it to gently drip and the rest to evaporate. This interception lessens the force of storms and reduces runoff and erosion. Research indicates that 100 mature trees intercept about 100,000 gallons of rainfall per year in their crowns, reducing runoff and providing cleaner water. Tree roots also hold soil in place. Decaying leaves form an organic layer on the ground that allows water to percolate into the soil, which also reduces runoff and soil erosion. All of this helps reduce flooding in the streets and sedimentation in streams.





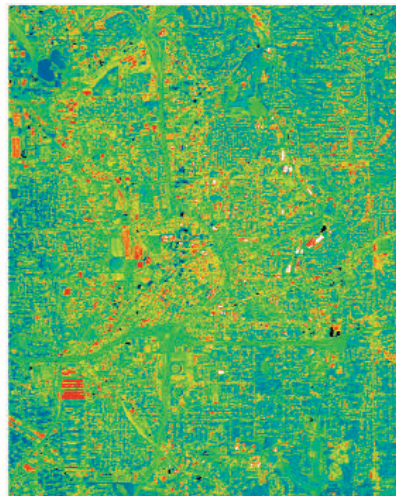
# TREES TEMPER LOCAL CLIMATE



Trees modify local climate, chiefly by lowering air temperature and increasing humidity; they can also influence wind speed and reduce glare. Inner cities are commonly known as "heat islands" because the buildings and pavement absorb solar energy and radiate it back. Trees lining streets or near buildings provide shade that can reduce the heat-island effect, lessening the amount of air conditioning needed. Evaporation of water from trees through the transpiration process also has a cooling effect, especially in hot climates or seasons.



Daytime thermal temperatures in Atlanta, Georgia (Central Business District) in 1997 (courtesy of National Aeronautics and Space Administration)



# TREES CONSERVE ENERGY

In addition to reducing the heat island effect, community trees can conserve energy with their shading and evapotranspiration effect. For example, three or more large trees strategically placed on sunny sides of a house shade it from the hot summer sun, thus reducing the air-conditioning cost as much as 30 percent. Deciduous trees are best for this use because they lose their leaves in winter, exposing the house to the warming winter sun, which lowers the energy needed to heat the house. Coniferous trees, because they retain their needles year-round, make fine screens and serve well as windbreaks when placed in the path of the prevailing winds, usually the north and northwest sides. These trees can also reduce energy use in a house by shielding it from the most severe cold.

These energy savings, spread over many houses and many neighborhoods, can reduce the demand for power production by utility plants, which in turn



reduces the air pollutants produced by these plants.



# TREES ARE GOOD FOR THE ECONOMY

Community trees provide subtle but real economic benefits. The value of houses on lots with trees is usually higher than those of comparable houses on lots without trees. Studies have shown that shoppers linger longer along a shaded avenue than on one barren of trees. Shaded thoroughfares are not only more physically comfortable but also psychologically more attractive. And an abundance of trees "says something" about a community that makes it more appealing to newcomers as well as residents. In addition to enhancing the home and

business environment in an urban area, recreation areas such as parks, greenways, and river corridors that are well stocked with trees tend to keep recreation seekers "at home" rather than driving many miles to find suitable places to play. Here again, less fuel is used and less pollution created. It would be difficult to put a dollar value on such urban playgrounds, but if each visit were valued at only one dollar, the total for the typical city would be in the thousands of dollars per year.



# TREES CREATE HABITAT FOR PLANTS AND ANIMALS



Wherever trees are established, wildlife and other plants are sure to follow. Trees and associated plants provide shelter and food for a variety of birds and small animals. The presence of trees creates an environment that allows the growth of plants that otherwise would not be there, enhancing the diversity. Again, the monetary value of such diversity is incalculable, but it is well known that residents of and visitors to a community appreciate and enjoy it. Simply put, the presence of trees creates an environment that is much more pleasant for living, working, and playing.





# TREES IMPROVE HEALTH



The health benefits of cleaner air and water are self-evident. But it is also known that green environments reduce stress in people, making them more productive at work and happier at home. Trees and their

associated vegetation have a relaxing effect on humans, giving them a general feeling of calmness and well-being.

Among those who benefit from the proximity of trees are hospital patients. Studies show that patients with a window view of greenery recover faster and suffer fewer complications and medications than those without such views. Further, children with Attention Deficit Disorder (ADD) were found to have better behavior in green environments. The presence of trees and other vegetation seems to have a soothing effect that tempers excessive behavior.

# TREES SERVE AS SCREENS

Densely planted rows of trees around homes and buildings and along streets and roads can serve as screens to preserve privacy and shut out unwanted or unsightly views. Wide belts of such plantings can also help to muffle sound.



# TREES PROMOTE COMMUNITY

A stronger sense of community, an empowerment of inner-city residents to improve neighborhood conditions, and the promotion of environmental responsibility and ethics can be attributed to involvement in urban forestry efforts. Active involvement in tree-planting programs enhances a community's sense of social identity, self-esteem, and ownership; it teaches residents that they can work together to choose and control the condition of their environment. Planting programs also project a visible sign of change and provide the impetus for other community renewal and action programs. Several studies show that participation in tree-planting programs influences individuals' perceptions of their community. Conversely, a loss of trees within a community can have significant psychological effect on residents.





# WHAT YOU CAN DO



Cities and towns make harsh environments for trees, so we must give them special care and protection. Establishing and maintaining community trees and forests can be challenging and costly, but the benefits described here are well worth the time, trouble, and money spent. Trees in urban settings often need to be protected, planted (or trans-

planted), and tended. This is both an individual and community responsibility.

In addition to looking after the trees where you live, you can learn about and become involved in the management of the trees along your city's streets, parks and recreation areas. The wrong species or placement of trees, whether around a private home or commercial building or on public land, can mean wasted money and effort as well as defeating the purpose of the planting. Citizen input into such decisions is important. You can get involved at the local level in a range of activities. Organizations that can help you get started are listed on the next few pages. Also, visit this web site for a list of organizations and resources in the State where you live: <http://www.treelink.org/docs/states.phtml>.

# FOR ADDITIONAL INFORMATION

Contact the office listed below:



## Other Sources of Assistance



### USDA Forest Service, Urban & Community Forestry Centers

Southern Center for Urban Forestry  
Research and Information  
USDA Forest Service – Southern  
Research Station and Southern Region  
320 Green Street  
Athens, GA 30602-2044  
Phone 706-559-4236  
Fax 706-559-4266  
Web [www.urbanforestrysouth.usda.gov](http://www.urbanforestrysouth.usda.gov)

Southern Center for  
Wildland-Urban Interface  
USDA Forest Service – Southern  
Research Station and Southern Region  
Seagle Building  
408 West University Ave., Suite 306  
Gainesville, FL 32601  
Phone 352-376-3213  
Fax 352-376-4536  
Web [www.interfacesouth.usda.gov](http://www.interfacesouth.usda.gov)

Center for Urban Forest Research  
USDA Forest Service  
PSW Research Station  
c/o Department of Environmental  
Horticulture  
One Shields Avenue  
Davis, CA 95616-8587  
Phone 530-752-7636  
Fax 530-752-6634  
Web [wcufre.ucdavis.edu](http://wcufre.ucdavis.edu)

Mid-Atlantic Center for Urban and  
Community Forestry  
USDA Forest Service, Northeastern Area  
Keystone College  
PO Box 1466  
La Plume, PA 18440-1099  
Phone 570-945-8095  
Fax 570-945-8096  
Web [www.fs.fed.us/na/morgantown/macucf/index.htm](http://www.fs.fed.us/na/morgantown/macucf/index.htm)

Midwest Center for Urban and  
Community Forestry  
USDA Forest Service, Northeastern Area  
1992 Folwell Avenue  
St. Paul, MN 55108  
Phone 651-649-5253  
Fax 651-649-5238  
Web [www.na.fs.fed.us/spfo/urban-forestry/ucf.htm](http://www.na.fs.fed.us/spfo/urban-forestry/ucf.htm)

National Agroforestry Center  
USDA Forest Service – NAC  
East Campus UNL  
Lincoln, NE 68583-0822  
Phone 402-437-5178 ext 24  
Fax 402-437-5712  
Web [www.unl.edu/nac/](http://www.unl.edu/nac/)



Northeast Center for Urban Forestry  
USDA Forest Service, Northeastern Area  
Holdsworth Natural Resources Center  
University of Massachusetts  
Amherst, MA 01003-4201  
Phone 413-545-3755  
Fax 413-545-4358  
Web [www.umass.edu/urbantree/](http://www.umass.edu/urbantree/)



**USDA Forest Service,  
Urban and Community  
Forestry Research Work  
Units**

Center for Urban Forest Research  
USDA Forest Service  
PSW Research Station  
c/o Department of Environmental  
Horticulture  
One Shields Avenue  
Davis, CA 95616-8587  
Phone 530-752-7636  
Fax 530-752-6634  
Web [wcufre.ucdavis.edu/](http://wcufre.ucdavis.edu/)

Effects of Urban Forests and Their  
Management on Human Health and  
Environmental Quality  
USDA Forest Service, Northeastern  
Research Station  
c/o SUNY-ESF, 5 Moon Library  
Syracuse, NY 13210-2778  
Phone 315-448-3200  
Web [www.fs.fed.us/ne/syracuse](http://www.fs.fed.us/ne/syracuse)

Managing Forest Environments for  
Urban Populations  
USDA Forest Service, North Central  
Research Station  
Forestry Sciences Laboratory  
1033 University Place, Suite 360  
Evanston, IL 60201  
Phone 847-866-9311  
Fax 847-866-9506  
Web [www.ncrs.fs.fed.us/4902/](http://www.ncrs.fs.fed.us/4902/)

Recreation, Wilderness, Urban Forest,  
and Demographic Trends Research  
USDA Forest Service,  
Southern Research Station  
320 Green Street  
Athens, GA 30602  
Phone 706-559-4264  
Fax 706-559-4266  
Web [www.srs.fs.fed.us/trends/](http://www.srs.fs.fed.us/trends/)

**Southern Regional Extension  
Forestry**

Southern Regional Extension  
Forestry  
The University of Georgia  
4-433 Forest Resources

Building  
Athens, GA 30602  
Phone 706-542-7813  
Fax 706-542-3342  
Web [www.soforext.net](http://www.soforext.net)  
Web [www.forestryindex.net](http://www.forestryindex.net)

**Southern Group of State Foresters**



Southern Group of State  
Foresters  
P.O. Box 930  
Winder, GA 30680  
Phone 770-868-0337  
Fax 770-920-1661  
Web [www.southernforests.org/](http://www.southernforests.org/)

# NOTES



A series of horizontal lines for writing, decorated with various light green leaf silhouettes scattered across the page.



*Never doubt  
that a small group  
of thoughtful, committed  
citizens  
can change the world.  
Indeed,  
it is the only thing  
that ever has.*

- Margaret Mead

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.

