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.

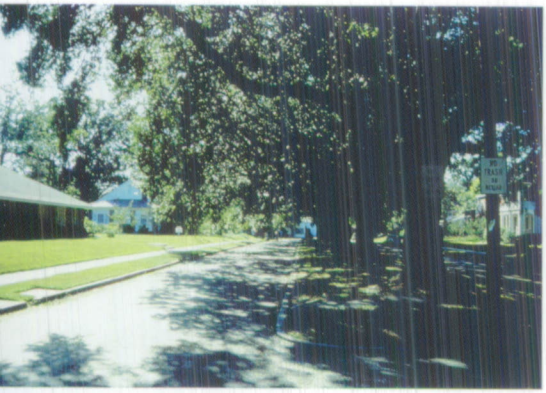
Trees Improve Air Quality

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.

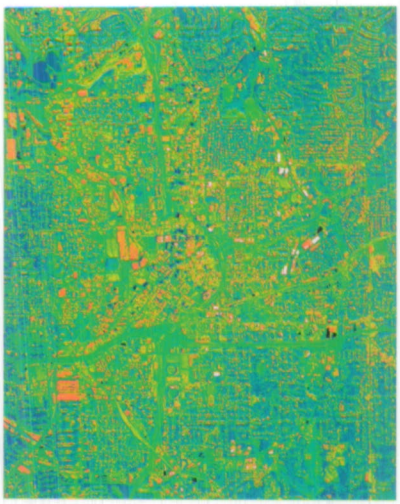
Trees Reduce Stormwater Runoff And Erosion

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

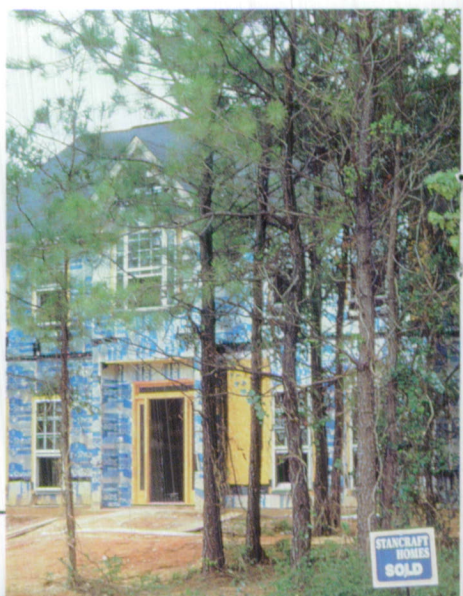
In addition to reducing the heat island effect, community trees can conserve energy with their shading and evapotranspiration effect. For example, three or more large trees strategically placed on sunny sides of a house shade it from the hot summer sun, thus reducing the air-conditioning cost as much 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

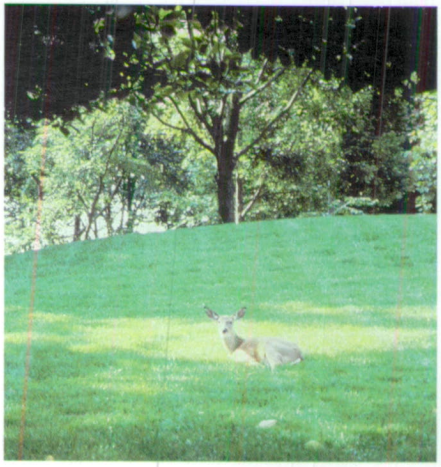
reduces the air pollutants produced by these plants.

Trees Are Good for the Ecomnomy

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 that 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 transplanted), 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

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

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

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

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

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/

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/

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/

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

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/

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/

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
Web 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/

Notes

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

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