



It would cost over \$5,000 to replace the storm water control services provided by this single large tree. It also removes 25 lbs. of air pollution every year.

Do We Really Value Urban and Community Trees?

by Jeff Kirwan and Eric Wiseman

Trees can reduce crime, increase cognitive development in children, and reduce environmental pollution. So why do we remain silent as schools, public buildings, and developments are planned and built around us with little or no consideration for preserving existing trees? Why are we satisfied with token trees that will

mature only after a building becomes obsolete? Should we be surprised that children, who attend schools that look and feel like prisons, behave like prisoners?

Posed with these questions, we must ask ourselves "do we really value urban and community trees?" Perhaps we are simply not aware of the diverse benefits that trees provide

for our communities. Just when we, as foresters, landowners and professionals, thought we had our hands full educating the public about the importance of forest management, we now find there is another critical story to tell about trees.

Before we start, please be aware that today 80 percent of the U.S. population lives in a metropolitan



The Chesapeake Bay watershed will lose 800,000 acres to sprawl over the next 20 years, 80 percent on agricultural land.

area, and that percentage is increasing. Also, we assume you already know that trees can increase residential property values up to 20 percent and that properly situated trees can reduce home energy consumption. What we wish to communicate here are some of the less well known, but critical, values and issues surrounding urban and community trees.

Cutting Down Trees does not Cut Down on Crime

In a surprising study of urban neighborhoods, University of Illinois researchers Frances Kuo and William Sullivan challenged conventional wisdom and studied crime reports from 98 apartment buildings in Chicago over a two-year period. They used aerial and ground level photography to assess levels of vegetation. Apartment buildings with a high level of greenery had 56 percent fewer violent crimes and 48 percent fewer property crimes than buildings without greenery.

Apparently, green spaces draw people together outside, which increases surveillance, the sense of community, and deters criminals. A well-kept apartment building is itself an indication that residents care about their neighborhood and may be watching.

Attention Deficit or Attention Surplus?

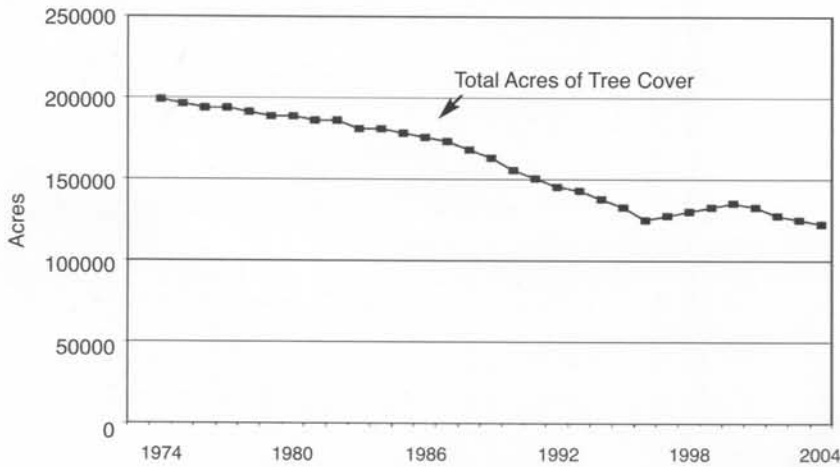
You have likely heard of the rise in Attention Deficit/Hyperactivity Disorder (AD/HD) among children across the country. It is estimated that two million children suffer from the disorder. So how do trees relate to this problem? Once again, and this time based on research by Nancy Wells and Gary Evans at Cornell University, trees have been shown to benefit children. They studied families who were relocated through a self-help housing improvement program. Children who experienced the most improvement in the natural environment of their home also experienced the most improve-

ment in their ability to concentrate. In another study, inner-city girls who had green views from their windows at home had a greater degree of self-discipline than girls who did not. The greener a girl's view from home, the better she concentrates.

Why City Planners Fear the Loss of Trees

Tree canopies intercept large amounts of rain, reducing the amount of runoff that is discharged into streams and rivers, and extending the time that a watershed has to absorb rainfall. This reduces flooding, erosion, and pollution, especially in metropolitan areas. The folks at American Forests, who are pioneering public outreach efforts in urban forestry, have put dollar values on the ecological services provided by trees. For example, it can cost up to \$5,000 to replace the storm water control services provided by just one large tree, based on current engineering standards used in the

Tree Canopy Loss in Fairfax County (1974-2004)



building industry. The same tree removes 25 lbs. of nitrogen, sulfur, ozone and particulate matter every year.

Fairfax County, Virginia, provides an excellent example of concern for loss of natural vegetation and forest cover. A recent study conducted by

their urban forest department showed that tree cover within the county has declined by one to two percent each year. The loss in tree canopy may not appear significant until you consider that the steady rate of decline has been occurring over the last 20 years (See Figure 1). It is even more significant

when you consider that 371 million cubic feet of storm water is intercepted and slowed by the county's urban forests on an annual basis (*American Forests*, 1999).

Trees and the Chesapeake Bay

In addition to storm water, trees also mitigate the effects of nitrogen runoff. Again, using Fairfax as an example, approximately one million pounds of nitrogen are absorbed by trees each year before the water reaches the Potomac River. When all air pollutants are considered together it is estimated that Fairfax trees provide \$15.5 million in annual air pollution filtration services (*American Forests*, 1999). Without the mitigating effect of trees, many of these pollutants would end up in the bay. Another factor to consider is that over the next 20 years, 800,000 acres in the Chesapeake Bay watershed will be lost to urban sprawl, 90 percent of it on agricultural land (*Boesch and Greer*, 2003). This actually presents a reforestation, albeit urban forest, opportunity!

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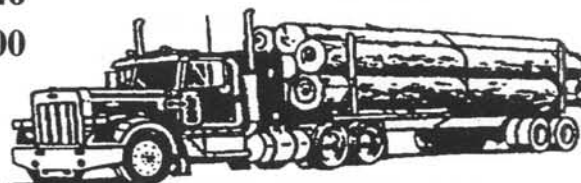
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Landscape Amnesia

Landscape amnesia is a loss of memory about how a landscape has changed over time. In his book, *Collapse*, Jared Diamond (2004) compares different societies over the course of history and theorizes why they succeed or fail. He suggests that landscape amnesia is a key cause of failure. When you consider that most U.S. families no longer live in one place for a lifetime, let alone stay in one place for several generations, you can understand how easily landscape amnesia occurs in our society. The degraded environmental conditions we experience today, such as the loss of oysters in the Chesapeake Bay, or the loss of green space in our neighborhoods, will become the norm for future generations. Will our children accept further degradation in their lifetime? When will the degradation end?

One way to combat landscape amnesia is to provide teachers and students with historic aerial photographs



Even though trees reduce crime and increase cognitive development in children, new schools are often built with little or no thought to trees and vegetation.

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of their community and show them how to calculate the loss of tree cover over time. These photographs and the people with skills to interpret them are found in forestry and natural resource agencies across the country. Thanks to a grant from the National Oceanic and Atmospheric Administration (NOAA), extension specialists in the Virginia Tech Department of Forestry, Project Learning Tree, and agency partners have been teaching earth science teachers in Virginia how to use global positioning systems (GPS), geographic information systems (GIS) and historic photographs as part of a "meaningful watershed experience."

Conclusion

The next time you hear of a new school being planned, or you talk to a group of children about forestry, seize the opportunity to be an advocate for the other forest, the urban forest. The future of our society may depend on it! ✈

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References

- Boesch, D.F. and J. Greer. 2003. *Chesapeake Futures*. Edgewater, MD: Chesapeake Research Consortium. 160 pp.
 Diamond, Jared. 2004. *Collapse: How Societies Choose to Fail or Succeed*. New York: Viking Press. 575 pp.
 American Forests. 1999. *Urban Ecosystem Analysis of Fairfax County, Virginia*. Fairfax: Urban Forest Management Division. 10 pp.

For additional information

- Value, Benefits, and Costs of Urban Trees:
<http://www.ext.vt.edu/pubs/forestry/420-181/420-181.html>
 Crime, Cognitive Development and Trees: University of Illinois Human-Environment Research Laboratory,
<http://www.herl.uiuc.edu/>

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Step 2



Step 3

(Repeat Steps 1 - 3 as necessary)

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