

Wider application

Aerial photography and satellite imagery are available for most urban areas. However, scientific data relating to the impact of the urban forest on such environmental issues as air pollution filtration and rainfall run-off moderation is less readily available in the UK than it seems to be in the USA. This is also the case for data regarding the local costs of energy consumption, storm water storage and flood damage. The cost benefit to human health or residential property value is even less well developed in the UK.

A UK translation of *CITYgreen* would be extremely useful, but there is a need to invest more heavily in data collection, in order to utilise the software's full potential as a planning tool. In the UK, *CITYgreen* has particular potential value for anticipating the likely impact of the loss of the maturing legacy of 19th century urban tree planting. This in turn should help to strengthen the case for better care of existing street and parkland trees, and for a more large scale strategic commitment to functional green infrastructure as an integral part of new development

Further information

National Urban Forestry Unit

This leaflet is one of a series produced by the National Urban Forestry Unit. NUFU is a charitable trust and it provides a national focus for the exchange of information and good practice in urban forestry. If you would like further information on other case studies, or if you have examples of good practice to share, please contact:

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American Forests

American Forests was founded in 1875 and is the USA's oldest non-profit citizens' conservation organisation. It is a world leader in the science and practice of urban forestry.

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Further reading

[American Forests \(2002\)](#)

CITYGreen 5.0 (See www.americanforests.org/productsandpubs/citygreen/ for details)

[Hewitt N et al \(2002\)](#)

Trees & sustainable air quality Lancaster University, Lancaster

[National Urban Forestry Unit \(1998\)](#)

Trees Matter! The Benefits of trees & woods in towns National Urban Forestry Unit, Wolverhampton

[TreePeople \(1997\)](#)

T.R.E.E.S. project (See www.treepeople.org/trees/ for details)

Photographs: American Forests, National Urban Forestry Unit

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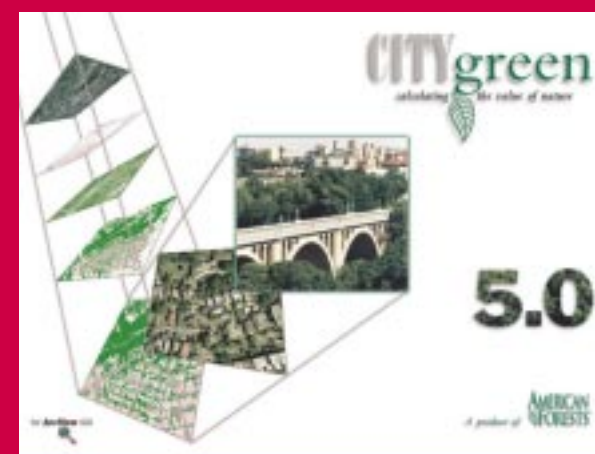


IN ASSOCIATION WITH



Urban Forestry in Practice

Measuring the economic value of urban greenspace



Measuring the economic value of urban greenspace

Introduction

For most of the benefits which come from trees and woods in towns – cleaner air, reduced storm water flooding, increased wildlife, enhanced property values – it is not the **number** of trees which matters, so much as the **extent** of the overall urban forest canopy.

Leaf surface area has a direct bearing on pollution filtration, rainfall interception, shade and shelter, and even the population of leaf-eating invertebrates that underpin the food chain for much of the rest of the wildlife.

It is increasingly possible to measure the benefits, and even to assess the financial implications. What planners and policy makers need is an easily accessible tool for modelling the links between environmental quality, economic efficiency, and the quantity and quality of greenspace in specific urban areas.

Each of these aspects of the environment has an economic value, and although it is difficult to be precise, for instance, about the impact on healthcare costs of an increase or decrease in air pollution, considerable research effort is now being directed towards this aspect of environmental economics.

The software allows the environmental impact and the economic value of the existing urban forest to be quantified. However the programme's most useful application lies in the capacity it provides for planners and policy makers to vary the extent of the canopy electronically, using computer graphics, and then to make comparative environmental and economic calculations based on a range of virtual urban greenspace models.

In other words, with *CITYgreen* it is now possible to assess the impact on such issues as air pollution or storm water run-off of an increase or a decrease in the canopy of the urban forest, and then to extrapolate to the economic implications for health care or flood management costs.

Specific example

Project name and location

CITYgreen COMPUTER SOFTWARE

Project partners

- American Forests
- ESRI

Project description

In the late 1990s the environmental organisation American Forests developed a sophisticated interactive Geographical Information System (GIS) in partnership with ESRI, a major computer software house. Using a combination of satellite imagery and aerial photography, the software makes it possible to produce an accurate appraisal of an urban area down to local neighbourhood level and to measure the extent of the existing urban forest canopy. In addition, by using historical data it is possible to trace changes to the extent and the make-up of this urban forest across whole conurbations.

Using the growing amount of applied research it is also increasingly possible to quantify the environmental impact of the vegetation: how much air pollution or rainwater the canopy can intercept, how much the ambient air temperature is being moderated; how many nesting bird territories the neighbourhood is likely to support, etc. and also to factor in the varying impact of different species of tree.



The significant factor in delivering most of the environmental benefits, is the extent of urban forest canopy, and not the number of individual trees



The existing canopy (above) can be manipulated electronically by CITYgreen. The image on the left shows a 30-year projection of the same neighbourhood, which enables planners to predict future environmental benefits of the maturing urban forest

Results

In towns and cities in the USA where the software has been employed, the true economic value of the urban forest is generally found to be far greater than was previously thought. For example:

- 30% tree canopy in Austin, Texas, saves \$122 million pa in storm water management costs.
- In Dade County, Florida, the shade and shelter from trees saves households \$5.3 million each summer, and the software shows that if oaks replaced the palm trees, that energy saving would increase by a further 20%.
- In Atlanta, Georgia, the city's trees currently store 475 000 tonnes of carbon, and add a further 3 715 tonnes each year.

As a planning tool, *CITYgreen* is proving useful in a number of urban areas in the USA, for justifying increased investment in the urban forest as a cost effective way of improving environmental quality and liveability.