



# Trees in the City

*While we usually think of forests and cities as two very different places, trees have a huge effect on how well cities function, and on the health and well-being of the people who live there. In fact, Peterborough's trees are an "urban forest," whose true worth we're just beginning to understand and value.*

Consider an aerial view of Peterborough in the summer. When you look down from a bird's eye view, the tree canopy covers much of what you see. The canopy is made up of islands of green leaves and branches that cover the streets, buildings and parkland. With greater understanding of the benefits of urban trees, many cities are setting targets of 40% for their total tree canopy coverage, as recommended by American Forests. While we don't have an accurate measure of Peterborough's urban forest canopy, a reasonable estimate for 2008 is approximately 20 to 25% of the total surface area of the city.

As Peterborough expands, we are losing more and more of our surrounding natural forests. The trees in town are increasingly stressed by air pollution, road salt, construction, droughts and windstorms. These pressures are taking a heavy toll, and replanting is not keeping up with annual losses. We are losing urban forest cover at a time when we need the benefits it provides more than ever. It's time to think of trees as essential to our health and welfare, not just optional landscaping.

Protecting and enhancing our urban forest is a community affair, requiring plenty of teamwork and advance planning. The first step is understanding the many benefits of trees in the city, and what it takes for individual trees to thrive in the urban landscape.



## IMAGINING A HEALTHY URBAN FOREST...

What would the ideal urban forest look like? Making room for people and trees is an important part of urban planning. Some goals include:

- trees of various ages – old, medium and young;
- a good variety of species, including city-hardy native trees;
- few or no invasive species;
- well-chosen locations for each tree (space for root growth and canopy development);
- robust trees with minimal dead or dying branches;
- an overall canopy cover of 30 to 40%;
- an active community, committed to the care and protection of the urban forest.

# How Do Urban Trees Help Us?

## ✓ IMPROVE AIR QUALITY

Most people are aware that trees replenish the air with oxygen, but did you know that their leaves remove pollutants and noxious gases? By absorbing compounds like nitrogen oxide, sulphur dioxide, carbon monoxide and ozone, trees help to alleviate smog. Prevailing winds blow polluted air towards Peterborough from Toronto, south-western Ontario and the American mid-west. Poor air quality sends hundreds of local people to hospital for treatment each year – many of them children.

## ✓ COMBAT CLIMATE CHANGE

As we pump carbon dioxide into the atmosphere by burning fossil fuels, more of the sun's heat is trapped in our atmosphere, and the earth is heating up. Trees can help to offset this problem by pulling some of that carbon out of the air and storing it in their wood, leaves and roots. Carbon can also be stored in the soil by allowing tree leaves to compost. Younger trees are most efficient in storing carbon.

## ✓ REDUCE ENERGY NEEDS

By placing trees in strategic locations around a building, homeowners can save 25 to 40% of their annual heating and cooling bills. Evergreens placed on the north and west sides of a building reduce heating costs by providing a windbreak in the winter. Deciduous trees on the south side let the sun shine through in winter, but shade the building in summer, lowering air-conditioning costs.

Cities are hot places in the summer. With so much pavement and concrete absorbing and re-radiating the sun's heat, cities are much hotter than the surrounding countryside. Urban trees help to cool the air around them in two ways: first, by directly shading streets and buildings and second, by actually lowering the temperature of the air around them. They act as massive natural air-conditioners, cooling the air 3 to 5°C (5 to 9°F) by transpiring vast amounts of water through their leaves.

## ✓ PREVENT FLOODS

Trees reduce storm water run-off by intercepting and slowing rainfall which encourages the water to percolate into the soil, rather than flow over the surface. The urban forest as a whole plays a valuable role in reducing flood risk and preventing polluted storm water from running directly into our sewers and streams. For every 5% of tree canopy added in a community, run-off is reduced by approximately 2%.

## ✓ REDUCE NOISE POLLUTION

Clusters of trees can effectively buffer noise. Tree buffers 30 meters (100') wide along highways and industrial sites reduce the impacts of noise pollution on humans and wildlife.

## ✓ IMPROVE PROPERTY VALUE AND SUPPORT THE ECONOMY

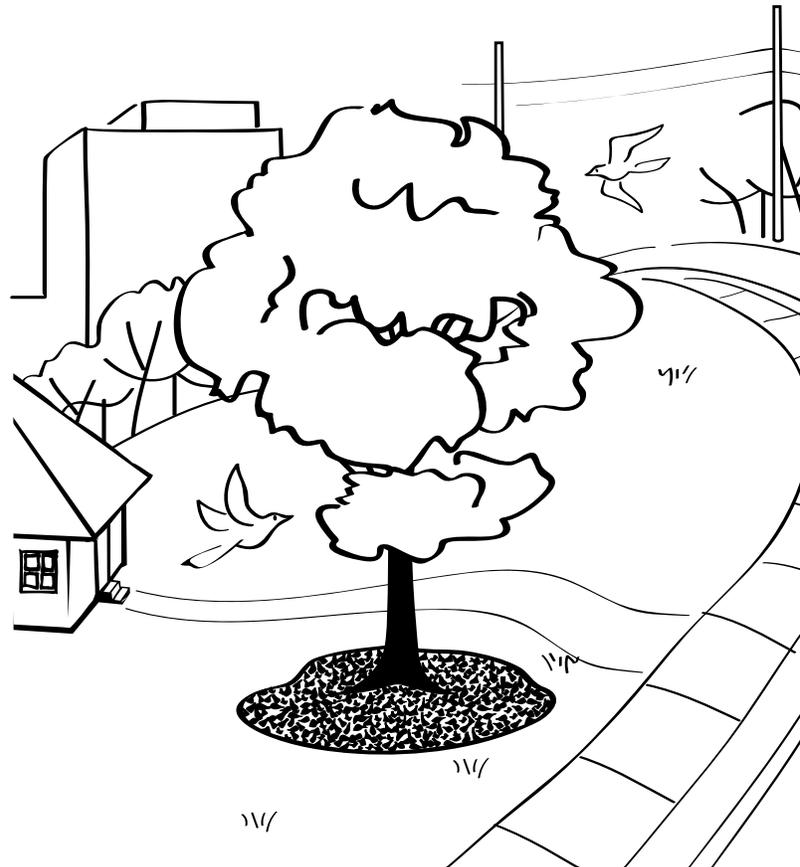
In some cities, the market value of residential properties in neighbourhoods with mature trees can be as much as 25% higher than non-treed neighbourhoods. People simply prefer to live and spend time in treed neighbourhoods. Trees also provide a business-generating atmosphere. Studies have shown that street trees and leafy landscaping can encourage the public to spend 11% more in businesses located within vegetated landscapes.

## ✓ PROVIDE WILDLIFE HABITAT

Trees and corridors of greenspace provide important habitat for urban wildlife. For 80% of Canadians, the urban forest is their primary link and exposure to wildlife. As natural areas are lost to agriculture or development, urban greenspace becomes a lifeline for wildlife such as birds and butterflies. A diverse urban forest provides a range of food sources and shelter.

## ✓ IMPROVE PHYSICAL AND PSYCHOLOGICAL HEALTH

Green spaces and natural areas promote psychological well-being. People enjoy walking in treed areas to relieve stress. Treed neighbourhoods have lower crime rates and an enhanced sense of community. The journal *Science* published a study of recuperation rates after surgery, showing that hospital patients with a view of trees recovered more quickly than patients who could only look out on brick walls.



# It's Tough to be a Tree in the City...

*Although trees provide so many benefits for city-dwellers, urban stresses make it difficult for trees to survive and thrive.*

## **X LACK OF WATER**

While most people think that tree roots are deep and extend no farther than the branches, most roots are within the top foot of soil and extend far beyond the branches. With so much pavement, most urban rainfall runs into storm sewers, leaving our trees very thirsty. Often, street trees are given very little rooting area which dries out even faster. During periods of drought, trees need deep watering throughout their root zone.

## **X COMPACTED SOIL**

Heavy equipment and excessive foot traffic in the tree's root zone squeeze air out of the soil and make it difficult for tree roots to breathe. Restricting heavy equipment and vehicles in the root zone and limiting foot traffic in sensitive areas will reduce stress for trees. Frequent additions of thin layers of leaf compost around a tree's roots will attract earthworms which help aerate the soil.

*With all the stresses of city life, the average life expectancy of a newly planted urban tree is only 10 to 15 years. With a little attention and careful planning, we can help our trees live long, productive lives.*

## **X NOT ENOUGH FOOD**

Many new developments have very little nutrient-rich topsoil, since most is removed during construction. To make matters worse, many homeowners remove fallen leaves each autumn, preventing their nutrients from being returned to the soil. Gradually building the topsoil by adding compost and mulching fallen leaves with a lawnmower will help feed trees naturally.

## **X IMPORTED PESTS AND DISEASES**

Global trade can bring foreign pests that have no natural predators to keep them in check. Diseases such as Dutch Elm and pests such as Emerald Ash Borer can wreak havoc with urban trees, especially if they are already stressed. Planting different species and minimizing tree stress is the best line of defence.

## **X ROAD SALT AND AIR POLLUTION**

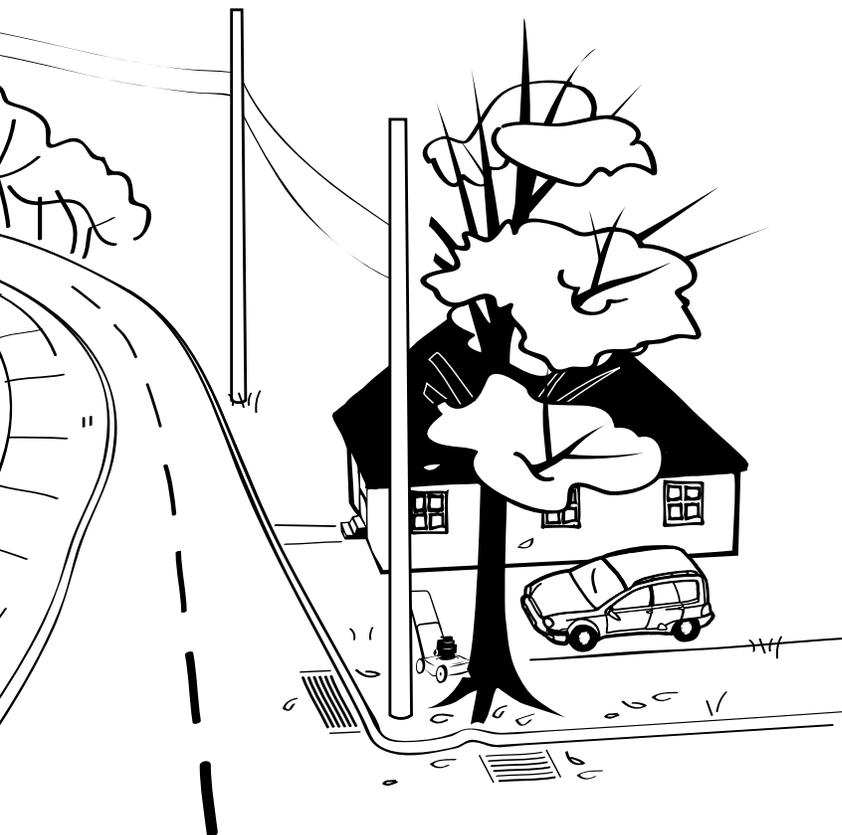
The salt used to de-ice roads and sidewalks can dehydrate trees. Pollutants such as ozone (a product of smog from traffic on hot days) make it difficult for leaves to breathe.

## **X RESTRICTED ROOT ZONE**

Healthy roots are of fundamental importance to thriving trees. With so many underground obstacles such as water mains, sewer lines, and building foundations, very little space is left in urban areas for tree roots. Choose appropriate planting sites to allow for healthy root growth. In areas of limited underground growing space, smaller plants are better options.

## **X PHYSICAL INJURY**

Damage to tree bark can be an invitation to disease. Gouging with lawn mowers, girdling with weed-whackers, bashing into trees with vehicles and machinery can shorten or end a tree's life. If construction around trees cannot be avoided, protective temporary fencing should be installed to protect the root zone, extending at least as far as the tree's branches.



## How You Can Help

### MAINTAIN THE OLD

Larger mature trees provide more overall benefits than small trees. This means our first priority is taking good care of existing trees to help them thrive. A few tips for good maintenance include: top-dressing the root zone with leaf compost every year (1 to 2 cm, 1/2" depth), watering deeply during periods of drought, mulching fallen leaves with a mower in autumn, properly pruning damaged branches and protecting the trunk and root zone from damage. Keep mulches and compost away from the trunk.

### ENCOURAGE AND DIVERSIFY THE YOUNG

Have a look around your yard and neighbourhood. Are there many kinds of trees, or are they mostly the same species? Look for good plantable spaces in your area, and work with your neighbours to boost the diversity of your urban forest. Young trees need extra attention – make sure they're thoroughly watered once a week during dry periods. Did you know that young trees can grow twice as quickly if their root zones are mulched with woodchips instead of

letting grass grow around the trunk? Remove all stakes and guy wires around young trees after one year, and protect tender tree bark from damage by installing and maintaining tree guards. See Green-Up's fact sheet "Planting and Caring for Trees" for more details.

### BECOME A VOLUNTEER URBAN FORESTER

There are many ways to help create a healthy urban forest. Caring for the trees on your own property is one way to begin, but there are many other opportunities to consider. Helping with neighbourhood tree inventories, planting and maintenance programs, training workshops or public education events are some of the ways you can get involved. For upcoming events, call Peterborough Green-Up at 745-3238 or check the urban forest website at <http://urbanforest.greenup.on.ca>.

### RECOMMENDED RESOURCES

Green-Up Fact Sheets: Planting and Caring for Trees; Choosing a Tree; Invasive Exotic Plants in Ontario (click on "Resource Centre" at [www.greenup.on.ca](http://www.greenup.on.ca))  
MNR Extension Note: "Maintaining Healthy Urban Trees" ([www.grwa.ca/mnr\\_docs/MNR%20Extension%20Notes/Maintaining%20Healthy%20Urban%20Trees.pdf](http://www.grwa.ca/mnr_docs/MNR%20Extension%20Notes/Maintaining%20Healthy%20Urban%20Trees.pdf))

#### Websites:

Our Urban Forest Program,  
<http://urbanforest.greenup.on.ca>;  
Ontario Urban Forest Council, [www.oufc.org](http://www.oufc.org);  
Tree Canada, [www.treecanada.ca](http://www.treecanada.ca);  
International Society of Arboriculture (Public Resources), [www.treesaregood.com](http://www.treesaregood.com);  
US Forest Service, [www.na.fs.fed.us/urban](http://www.na.fs.fed.us/urban)  
Ecology Park Tree Nursery (Ashburnham Drive, beside Peterborough Utilities; open May through October)



*Peterborough's urban forest*



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