

Ecosystem Services Provided by the Urban Forest **By Meaghan Eastwood, Toronto & Region Conservation Authority**

The urban forest is an essential ingredient for healthy and livable communities. A resilient and expansive urban forest offers preventative health care benefits by filtering harmful air pollutants. Trees in Mississauga remove approximately 430 tonnes of air pollution annually; this service is valued at \$4.8 million annually. Approximately 55 percent of the total pollution removed is ground level ozone, a pollutant which irritates and damages respiratory systems and reduces lung function (TRCA, 2011). The urban canopy also improves local water quality by filtering pollutants that would otherwise flow to receiving waters. In addition, trees and shrubs moderate the speed and volume of stormwater runoff and reduce soil erosion by diminishing the impact of rainfall on barren surfaces.

Trees shade buildings in the summer and block cold winds in the winter, reducing the energy consumed for air conditioning and heating. For example, trees in the City of Toronto reduce residential energy costs by \$9.7 million annually. Due to the decreased demand for heating and cooling the production of 17,000 tonnes of carbon emissions by power plants is avoided annually (City of Toronto, 2010).

The urban forest can also mitigate local and global climate change. Trees reduce atmospheric carbon dioxide concentrations by sequestering and storing carbon in woody tissue. The total volume of carbon stored by trees in the urban area of Pickering is equivalent to annual carbon emissions from 69,000 automobiles (TRCA, 2011). The urban forest mitigates the urban heat island effect by shading paved surfaces and transpiring water, thereby reducing local temperatures during summer heat events.

The trees in our communities provide direct economic benefits by extending the life span of grey infrastructure and increasing residential property values. Trees contribute to urban quality of life by creating relaxing, walkable, and aesthetically pleasing neighbourhoods. Urban vegetation and community parks have been found to reduce neighbourhood crime levels, improve children's test scores and relieve symptoms of Attention Deficit-Hyperactivity Disorder (ADHD) (Kuo and Sullivan, 2001; Faber Taylor, *et al.* 2002; Faber Taylor and Kuo, 2009). Finally, the urban forest provides habitat for native and migratory wildlife and contributes to regional biodiversity. Extending from street trees to forest ravines, the urban forest is vital natural infrastructure that contributes directly to environmental, social and economic health.

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