Canadian Urban Forest STRATEGY

2019-2024

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Table of Contents

Executive Summary

This document is the third iteration of a national urban forest strategy for Canada, born out of efforts to incorporate urban forests as part of the National Forest Strategy. The Canadian Urban Forest Strategy is being stewarded by the Canadian Urban Forest Network, of which Tree Canada is the Secretariat. The Canadian Urban Forest Network, along with municipal, provincial and federal representatives, provided direction for its creation. With an increasingly urbanized population, the pressures being exerted on Canada's urban forests are only expected to increase in the future. To address these pressures, this Strategy will have five Strategic Objectives to further its Vision: National Urban Forestry Capacity Building, Communications and Public Education, Research, Techniques and Technologies for Urban Forest Planning and Management, and Professional Development.

Vision

Our vision is to have sustainable, biodiverse and healthy urban forests that protect and enhance the well-being and prosperity of Canadian communities.

1. Background

According to Statistics Canada "An urban area (UA) has a minimum population concentration of 1,000 persons and a population density of at least 400 persons per square kilometer, based on the current census population count. All territory outside urban areas is classified as rural. Taken together, urban and rural areas cover all of Canada."

According to the 2016 census, 81.1% of Canadians live in urban areas. The urban forest in and around these towns and cities provides many benefits including: sequestering of gaseous air pollutants and particulates; energy conservation; storm-water attenuation; noise buffering; provision of wildlife habitat; increased property value; improved aesthetics; psychological well-being; and recreational and educational opportunities. These benefits accrue not only to the owners of the trees and forest but also to the entire community. While the same can be said for the wildland forests of Canada, the connection in the urban forest is much more dramatic because the beneficiaries live within the urban forest. As the role of municipalities, academic institutions and NGOs has steadily increased in the urban forest, urban forestry as a field of practice and study has improved.

The Canadian Urban Forest Strategy (CUFS) was first articulated in 2006 as a strategic initiative of Canada's urban forest practitioners including: foresters, managers, arborists, planners, community workers and politicians. It coincided with Canada's National Forest Strategy (1988-2008) a government, NGO and private sector coalition whose aim was to move Canada towards forest sustainability. The final iteration (2003-2008) of the National Forest Strategy included a section on urban forests which had as one of its recommendations the creation of a Canadian Urban Forest Strategy. In 2008, when Canada's National Forest Strategy dissolved, Tree Canada assumed the Secretariat for the Canadian Urban Forest Strategy.

This version of the Strategy was created as a result of several consultation workshops in each region of Canada, and by consulting with the 900+ members of the CANUFNET list serve. Consultation was also carried out by contacting each of the departments responsible for forests of every province and territory, the federal government and the Federation of Canadian Municipalities.

Tree Canada is a non-profit charity dedicated to improving the lives of Canadians by planting and nurturing trees. Since 1992, Tree Canada has planted and cared for more than 80 million trees, greened more than 600 schoolyards, assisted over 350 communities in their urban forest programs, hosted 12 Canadian Urban Forest Conferences (held every two years), helped restore treed areas hit by natural disasters, and brought together urban forestry experts to green cities across Canada. Tree Canada is the Secretariat of the Canadian Urban Forest Network and Strategy.

For more information about Tree Canada, visit: www.treecanada.ca.

For more information about how you can become involved in the Canadian Urban Forest Network and Strategy, visit: www.cufn.ca.

2. Accomplishments in the short term

Throughout this document, the word “community” is frequently used. To better clarify, community can be defined as, “a unified body of individuals such as the people with common interests living in a particular area”. In this document, “community” will mean municipalities as defined by the various Acts in each of the provinces and Territories as well as neighbourhoods, which contribute to those municipalities. In addition, “communities” will also include Indigenous communities: First Nation, Métis and Inuit people.

Urban forestry has progressed substantially over the past decade in Canada. Successes have included fostering greater learning both nationally and internationally, providing multiple opportunities for people to come together building a national urban forestry community in which people feel heard.

Recent national-scale achievements include:

- The development of Canada’s first Bachelor of Urban Forestry program at the University of British Columbia, the development of a urban forest program at Fleming College and the University of New Brunswick and a general expansion of urban forestry and arboricultural programs throughout Canada;
- The development of the Brick Works Project in Toronto as a large-scale demonstration project of urban forest principles;
- The increasing use of strategic urban forest planning by many municipalities;
- The Ontario Heritage Tree inventory being implemented by the Ontario Urban Forest Council and Forests Ontario;
- The interest in the links between trees and health as exemplified by the studies undertaken by Health Canada and the Mon Climat, Ma Santé program of the Institut national de santé publique du Québec which specifically targets the health risks of heat islands;
- Tree Canada’s State of Canada’s Municipal Forests Survey taking place every 3-5 years - information collected includes details on budgets, inventory systems, canopy cover, bylaws and social considerations (Bardekjian, Kenney & Rosen, 2016);
- Increased membership on the urban forest listserv (CANUFNET) and growing interest in the Canadian Urban Forest Conference;
- The mobilization of community tree organizations in communities across Canada, in every Region;
- The widescale implementation of the FireSmart Canada program throughout Canada within the urban-rural forest interface;
- Creation of regional urban forestry Action Plans with teams mobilized by the Canadian Urban Forest Network Steering Committee, delivery of five regional workshops across Canada (2015) with the main objective to strengthen the regional networks and foster collaboration by providing a space for communities and municipalities to discuss their needs within the framework of the Canadian Urban Forest Strategy.

The past four years (2014-2018) have shown real on the ground progress towards the goals of the original Strategy. Some of these achievements have been a direct result of the earlier Strategy; however more work remains.

3. Urban Forestry Defined

Jorgensen defined the term urban forestry in 1974 as "… a specialized branch of forestry and has as its objectives the cultivation and management of trees for their present and potential contribution to the physiological, sociological and economic well-being of urban society. These contributions include the over-all ameliorating effect of trees on their environment, as well as their recreational and general amenity value."

Deneke (1993) expanded on the term: "Urban forestry is the sustained planning, planting, protection, maintenance, and care of trees, forests, greenspace and related resources in and around cities and communities for economic, environmental, social, and public health benefits for people. The definition includes retaining trees and forest cover as urban populations expand into surrounding rural areas and restoring critical parts of the urban environment after construction. Expansion at the urban/rural interface raises environmental and public health and safety concerns, as well as opportunities to create educational and environmental links between urban people and nature. In addition, urban community forestry includes the development of citizen involvement and support for investments in long-term on-going tree planting, protection, and care programs."

The latter definition, while consistent with Jorgensen's original, serves to highlight many of the broader aspects of the field that are fundamental to this strategy. From this definition, this strategy document considers the following definitions:

Urban forests are trees, forests, greenspace and related abiotic, biotic and cultural components in areas extending from the urban core to the urban-rural fringe.

Urban forestry is the sustained planning, planting, protection, maintenance, management and care of trees, forests, greenspace along with related resources in and around cities as well as communities for economic, environmental, social, and public health benefits for people.

The definition of urban forestry includes: techniques associated with retaining trees in the context of densification; forest cover in the context of urban expansion into surrounding rural areas, and greening critical parts of the urban environment after development and urbanization. As the geographic and social distinctions between urban and rural become less clear, urbanization raises environmental and public health and safety concerns, thereby creating a need for educational and environmental links between urban people and nature. Urban forestry is multidisciplinary and multifaceted, comprised of many actors in research, policy, practice, and community engagement. Urban forestry includes the development of citizen involvement and support for investments in long-term on-going tree planting, protection, and care programs.

4. The Resource Under Pressure

Urban trees exist in an inherently difficult environment. Limited growing space above and below ground, sharing space with utilities, contaminated and compacted soils, de-icing salt, and the physical damage caused by trenching, mowers, snow removal activities and cars, are but a few of the factors that prevent most urban trees from reaching their genetic potential. In addition to contributing directly to the decline of trees, these factors can predispose them to attack by insects and diseases.

Lack of genetic diversity and monoculture practices in our urban forests are also limiting factors in achieving their maximum benefits. Many urban forests have an over-representation of relatively few species, most of which are grown from genetically identical trees in landscape nurseries. Many regions in Canada, including the northern areas of most provinces, the Prairie provinces and the territories experience harsh climatic conditions that place further limitations on the variety of tree species able to grow and thrive in urban environments. This narrow genetic base leaves our urban forests vulnerable to insect and disease infestations, particularly invasive pests.

Dutch elm disease (DED) is a classic example. Dutch elm disease was discovered in Eastern Canada in the 1940's eventually killing 80% of the elms in Toronto and 90% of the elms in Montreal. As the disease continued to move west, the impact on the cities and towns in the Prairie Provinces was even greater than that experienced in communities in the east due to the prevalence of elms in these communities. It could be argued that the loss of elms in many North American cities was the crisis that first raised public awareness of the urban forest. Throughout the 1980s, municipalities sought to replace the elm with other trees resistant to the urban condition, including ash and to a much lesser extent, hackberry. While DED was historic and helped raise awareness, we are once again living through another urban forest crisis as the emerald ash borer (EAB) which crossed the Michigan border into Ontario in 2002 is effectively reducing the canopy cover of many of eastern Canada's cities. In 2017, EAB was found in Winnipeg, Manitoba and in 2018 in Edmundston, New Brunswick. This again proves the need for a national approach to urban forest stewardship.

Cities tend to be the "port of entry" for most introduced pests including Dutch elm disease, Asian long-horned beetle, brown spruce long-horn beetle and emerald ash borer, to name a few, mainly due to human activity. Invasive plant species that threaten many forest ecosystems also find their way to "wild" forests through the urban parts of the country. Consequently, an effective program to educate the public and to monitor for and control invasive pests in our urban forests will reduce their impact locally and will also help protect wildland forests. It is crucial that partnerships with all levels of government, non-profit and community groups be strengthened and that the higher levels of government make urban forests part of their core programs, in mandates and policies.

Urban sprawl is common on the fringes of Canadian communities, large or small. As people choose to move to more rural settings, this exodus often erodes the very aspects that drew people there in the first place. While the impacts of many natural and anthropogenic disturbances to forests in the wildlands dissipate in a relatively short period of time, most aspects of urbanization are permanent, or will persist at least as long as humans occupy the landscape. Fortunately, cities have realized the servicing expense of sprawl and have embraced the philosophy of "densification" or "smart growth" or "growing within" or "building up". As desirable as this trend may be, the price that is paid in terms of canopy cover has been high as there has been insufficient resources and time spent to preserve trees within densification projects or to compensate for trees lost to densification.

In recent years, forest fires in the urban/peri-urban interface of some northern communities have taken their toll (e.g. Fort McMurray, AB in 2016). The impacts of these fires on the forests and communities are mostly a result of urban development into the wildlands aggravated by changing climate and fuel conditions.

Climate change is having an enormous impact on urban forests, as it has with wildland forests; warmer temperatures, drier conditions, and extreme weather events such as violent wind, heavy snow, and ice storms are taking a heavy toll on urban forests (e.g. 2017 ice storm in New Brunswick where miles of power poles were taken out and mature trees were damaged or destroyed; 2017 severe flooding and microburst wind storms in Montreal, QC, with many trees destroyed; 2013 and 2015 in the Prairie communities as a result of downbursts and tornadoes, etc., etc., etc.).

4 Rioux, D. 2003. Dutch elm disease in Canada: Distribution, impact on urban areas and research. Natural Resources Canada, Canadian Forest Service.

5. The benefits of urban forests on human health

On the other hand, the urban forest has been seen by many as a possible vehicle through which to reduce some of the impacts of climate change (Nowak et al., 2018; Nortona et al., 2015; Demuzere et al., 2014). The impact of the urban heat island on human health is currently receiving considerable attention in larger Canadian centres (Wang and Akbari, 2016; Wang et al., 2016). For example, the City of Toronto passed a Shade Policy (2015) to ensure that shade is now present after any new development or re-development in the City to protect against ultraviolet radiation and mitigate the heat island effect – this includes natural shade (i.e. trees). The role of urban forests in reducing the effects of the urban heat island is well recognized. In its Climate Change Action Plan, the Quebec Ministry of Health and Social Services recognized this role and announced in 2008 a program of grants to help communities counter the heat island effect through re-vegetation; this program remains funded until 2021.

Furthermore, other illnesses caused or aggravated by air pollution, notably respiratory illness, cardiac disease and neurological pathologies (dementia, autism) have negatively impacted Canadian populations. The Ontario Medical Association (2000) estimated that over 1,900 premature deaths, 9,800 hospital admissions and 13,000 emergency room visits per year can be directly attributable to air pollution. Trees and greenspaces are widely seen as a way to mitigate this pollution.

Finally, the presence of urban trees and greenspaces can contribute to the reduction of the prevalence and severity of several mental illnesses such as anxiety, depression, stress, attention-deficit hyperactivity disorder in children, and improve general well-being by providing opportunities for exercise and social interactions (Ulmer et al., 2016; Wolf & Robbins, 2015). Indeed, the entire practice of “forest bathing”, widely developed in Japan to counter stress and other mental problems is receiving greater acceptance elsewhere.

Many vulnerable populations live in districts deprived of trees and greenspaces. Based on available economic studies by TD Bank, it was shown that greener cities are saving billions of dollars per year in environmental costs through tree cover (Alexander & McDonald, 2014).

6. The Canadian urban forest Network (CUFN)

The Canadian Urban Forest Network is a pan-Canadian action group that speaks for Canada's urban forests. In general, the network membership is composed of municipal foresters, provincial and federal health, economy, environmental and natural resource agencies, professional organizations, business associations, educational institutions, non-governmental organizations, and community groups. There are at present over 900 members of the Network, for which Tree Canada is the Secretariat.

The objectives of the Network are to build value by helping and empowering those who practice urban forestry; bring together those who are interested in urban forestry; facilitate the exchange of information about urban forestry in Canada; and increase awareness about the urgent issues facing Canada's urban forests.

The CUFN is guided by a National Steering Committee that reports to its members through a meeting held at the Canadian Urban Forest Conference (CUFC), updates through the CUFN list serve and website and a series of workshops in the off year of the CUFC. The National Steering Committee is comprised of representatives from: British Columbia, Prairies, Ontario, Quebec, and Atlantic Canada. It is the Network that guides the creation and revision of this document and it is through this process that the Vision, Mission and Steering Committee are reviewed.

6.1 The Canadian Urban Forest Network Steering Committee

At present, the Committee members are:

Executive Director: Dr. Adrina C. Bardekjian, MFC, PhD – Manager, Urban Forestry Programs & Research Development, Tree Canada; Montreal, QC.

CUFN Chair: Michael Rosen, R.P.F – President, Tree Canada; Ottawa, ON.Atlantic Region: Heather Fraser – Natural Resource Program Coordinator, City of Moncton; Moncton, NB.

Atlantic Region: Heather Fraser – Natural Resource Program Coordinator, City of Moncton; Moncton, NB.

Quebec Region: Dr. Christian Messier, PhD – Professor of forest ecology and urban forestry at Université du Québec en Outaouais (UQO) et Montréal (UQAM); and NSERC/Hydro-Québec industrial Chair in tree growth in urban areas; Quebec.

Ontario Region: Peter Wynnyczuk – Executive Director, Ontario Urban Forest Council; Richmond Hill, Ontario.

Prairies Region: Gerard Fournier, Board Certified Master Arborist, Red Sealed Journeyman Landscape Horticulturist – Community Advisor, Tree Canada, and Instructor at Olds College; Calgary, AB.

British Columbia Region: Lanny Englund, M.Sc., RPBio, ISA Certified Arborist – Urban Forestry Manager; City of Coquitlam, BC.

6.2 Primary tasks of the Steering Committee

- To provide input and direction for the Canadian Urban Forest Strategy when it is up for renewal each term;
- To actively communicate with all interested parties at the local, provincial and national levels of government and non-government.
- To facilitate the development of regional urban forestry action plans.

7. Canadian Urban Forest strategy (2019-2024)

This version of the Canadian Urban Forest Strategy is for the period 2019-2024. To meet the Strategy's Vision: Our vision is to have sustainable, biodiverse and healthy urban forests that protect and enhance the well-being and prosperity of Canadian communities, it will be necessary to concentrate activities under five Strategic Objectives. These are:

1. National Urban Forestry Capacity Building
2. Communications and Public Education
3. Research
4. Techniques and Technologies for Urban Forest Planning and Management
5. Professional Development

7.1: National Urban Forestry Capacity Building

In Canada, urban forests tend to come under the responsibility of local municipalities. The federal and provincial governments occasionally make contributions related to individual emergencies (ice storms, fires, insect infestations etc.) and perform some research, but lack a sustained, long-term commitment for the support of urban forest stewardship. This strategic objective deals with the broad-scale capacity building that is needed related to financial commitment, collaborations and engagement.

Goals

1. To have strong and lasting financial commitments for urban forest stewardship.
2. To have consistent collaborations between urban forestry and allied fields.
3. To have the significant engagement of federal, territorial, and provincial governments and their agencies, in urban forestry.
4. To have all Canadian communities develop and implement comprehensive, strategic urban forest management plans.

7.2: Communications and Public Education

The community has a 100% interest stake in the urban forest. This includes trees in municipal parks, in individual backyards, on boulevards and on local business properties. Benefits from the urban forest accrue to the community, not just the owner of the tree. Consequently, an informed and motivated community will be essential to any effective urban forestry program. This area deals with the exchange of information and knowledge amongst all stakeholders in Canadian communities.

Goals

1. To have access to information and knowledge about urban forestry readily available to Canadian communities.
2. To have a comprehensive understanding of the diverse audiences for Canadian urban forestry information.
3. To have a national Communication Plan that establishes coordinated approaches to promoting the concepts of urban forestry to industry, government, educational institutions, and the public.

7.3: Research

Sustainable urban forestry benefits from current research initiatives in both applied and social sciences. However, the unique nature of the urban forest makes the transfer of some research concepts difficult. For example, how applicable are the results derived from ecological studies in "wildland forests" to the urban environment? How applicable is conventional business theory to a resource with an ownership fragmented into 10 m urban lots? Research specifically directed to urban forestry issues has been exponentially growing. The vision for Canadian urban forestry research is that in recognizing the complexity of urban systems, research better integrates multiple and diverse perspectives in the interest of equitably exploring, examining and analyzing questions in all aspects of urban forestry and urban ecology. This area deals with the production and extension of research results to practitioners in all disciplines.

Goals

1. To have interdisciplinary approaches to urban forestry research become common practice.
2. To have practicing community's needs met by scholarly research.
3. To have the design of urban forestry research projects consider both applied and social diversity for adaptation and resiliency.
4. To have the interpretation and delivery of scientific findings accessible to all stakeholders through a variety of existing networks.

7.4: Techniques and Technologies for Urban Forest Stewardship

Urban forests must be strategically managed and incorporated as green infrastructure into land use planning both spatially and temporally to ensure their ability to provide a sustainable supply of ecological and socio-economic services, and support healthy, sustainable communities. Spatial integration of urban forest enables linking single trees (from backyards, boulevards and parks) with natural areas, ravines, urban and peri-urban woodlands into a functioning green system. Urban forest dynamic growth, and vulnerability also need to be enhanced in land use planning and design of gray infrastructure, while ensuring conservation and management of the existing urban forest on both public and private lands. Urban forest inventory and monitoring, application of GIS and remote sensing, quantification of urban forest benefits, urban forest risk assessment, maintenance and conservation, community engagement, bylaws, modeling and forecasting change and risks, are just some of the technologies and tools to support planning and adaptive management of urban forests. This area addresses techniques and technologies that can assist municipalities, groups, and individuals to adopt (and adapt) them to ensure the sustained supply of ecological, economic and social benefits from Canada's urban forests.

Goals

1. To have increased interdisciplinary planning toward a comprehensive understanding of ecological attributes and functions in urban settings.
2. To have diverse community groups embrace urban forest stewardship.
3. To have regularly maintained comprehensive online resource mapping Canada's urban forestry footprint including canopy cover studies, policies, bylaws, management plans and stewardship activities.
4. To have increased community capacity for urban forest stewardship through techniques and technologies.

7.5: Professional Development

As urban forestry expands with respect to knowledge, people and places, many more appropriately trained personnel will be needed in the private and public sectors. Training will range from continuing education through college and university programs to professional development through certifications and on the job training. Training for others who are not directly involved in arboriculture or urban forestry (e.g. planners, engineers) would also advance urban forestry. This area addresses the development and advancement of a highly trained urban forestry workforce as well as a cadre of informed allied professionals.

Goals

1. To have regular training available for urban forestry practitioners and allied professionals through continuing education programs, webinars, online courses, regional workshops and the Canadian Urban Forest Conference.
2. To have safe work practices in all provinces related to all urban forestry and arboricultural activities.
3. To have urban forestry courses available at all universities and colleges that have related faculties and departments.
4. To have professional standards for urban forestry and arboriculture articulated on a Canada-wide basis.

Living green infrastructure is the natural and human-made elements that provide ecological and hydrological functions and processes. Living green infrastructure increasingly encompasses: urban forests, bioswales, green roofs and natural & engineered wetlands in its technique of mitigating the deleterious effects of urbanization.

Acknowledgements

The following people contributed to the review of this version of the Strategy (in alphabetical order). Their interest and time in reviewing this document is much appreciated:

Dr. Adrina C. Bardekjian, Tree Canada and Faculty of Forestry, University of British Columbia

Martha Barwinsky, City of Winnipeg, MB

Jean-Philippe Détolle, Ministère des Forêts, de la Faune et des Parcs, QC

Dr. Johanne Elsener, President, Québec Arbres, QC

Lanny Englund. City of Coquitlam, BC

Brad Epp, Sustainable Development, Winnipeg, Manitoba

Ken Farr, Canadian Forest Service, Ottawa, ON

Sima Feuer, Sustainable Development, Manitoba

Heather Fraser, City of Moncton, NB

Matt Gemmel, Federation of Canadian Municipalities, Ottawa, ON

Dr. Pierre Gosselin, National Institute of Public Health (INSPQ), QC

Meagan Hanna, City of Montreal, QC

Penny Herbert, Ministry of Environment, Saskatchewan Forest Service, SK

Dr. Andy Kenney, R.P.F, University of Toronto

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Dr. Danijela Puric-Mladenovic, Ministry of Natural Resources and Forestry, ON and Faculty of Forestry, University of Toronto

Marc-Antoine Renaud, Ministère des Forêts, de la Faune et des Parcs, QC,

Michael Rosen, R.P.F, Tree Canada

Dr. Pierre Therrien, Ministère des Forêts, de la Faune et des Parcs, QC

Peter Wynnyczuk, Ontario Urban Forest Council, ON

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Thank You!

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