The Urban Forest of Prescott, Ontario

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June 14, 2015
June 8, 2016
October 22, 2020

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A. Executive Summary

This report provides an overview of the Town of Prescott's current urban forest and recommendations for the future.

Urban forests are important for residents, helping to provide shade, privacy, and beautify streets and properties, thereby increasing property values. Urban trees benefit human health by filtering air and water and performing other ecosystem functions, as well as contributing to the mental and physical well-being of urban residents. Lastly, urban forests are critical for urban wildlife performing functions such as pollination, seed propagation, and insect and pest control.

This report recommends implementing a plan that helps to protect the urban forest while making recommendations for tree planting, tree protection, as well as providing a native species list of trees indigenous to the area as well as trees migrating north in response to climate change impacts, such as temperature increases.

While Prescott once had a tree-planting program, currently there is none. A tree planting program would not only ensure there is sufficient canopy coverage (experts recommend a minimum of 30% for urban areas) but that species native to the area continue to be planted and are protected.

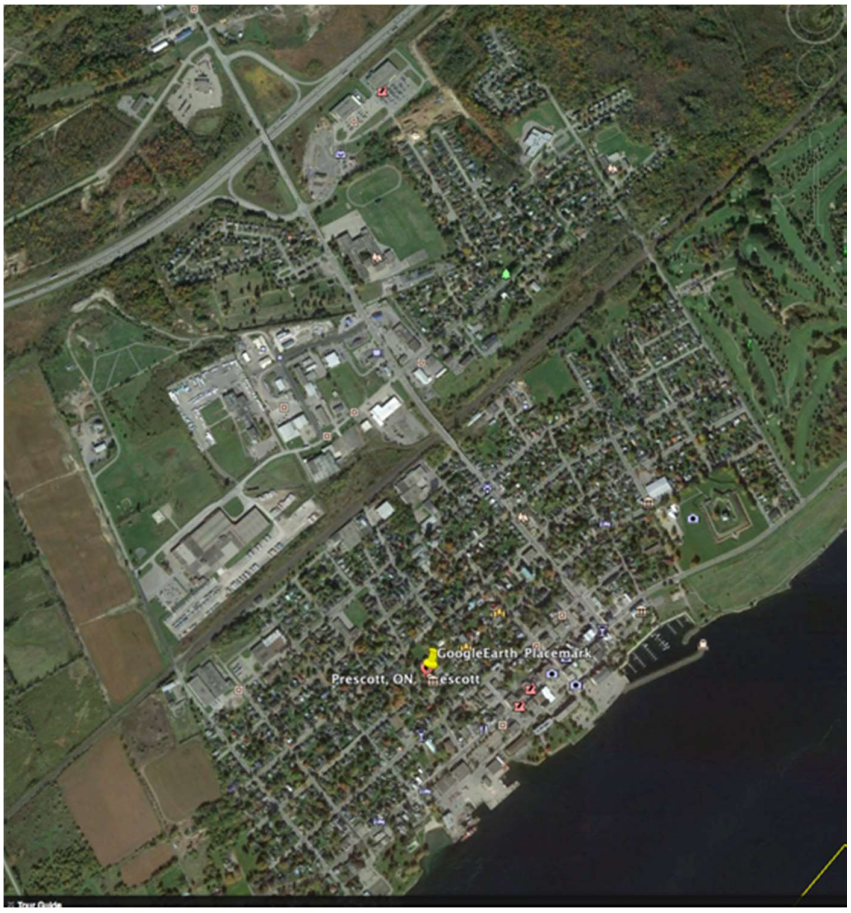
This report recommends an inventory be carried out for the arboretum and adjacent areas in order to assess and identify heritage trees, and gage tree health, age, and next steps in order to properly maintain the urban forest.

Furthermore, this report recommends that professionally prepared conservation and tree planting plans be required for all developments, including new builds, renovations, and major landscaping in order to reduce disruption to soil or roots, or other impacts to trees. Additional recommendations are made regarding protecting trees while conducting work that may impact them.

Lastly, a tree by-law has been drafted and can provide regulatory policy and procedures for protecting, increasing, and improving the urban forest.

B. Background

Many years ago, Prescott had a yearly tree-planting program. It is anticipated that with support from Communities In Bloom, Town Council, staff, citizens, business and institutions a new action plan will be created and implemented for the benefit of current and future generations.



The Town of Prescott rests in what was once a lush example of the Mixed Wood Forests of the Great Lakes/St. Lawrence. The principal tree species of this Canadian forest type are Red Pine, Eastern White Pine, eastern hemlock, yellow birch, maple and oak. The 2015 and 2016 Communities in Bloom programs in Prescott include a focus on the urban forest. This report provides an outline for possible action on the part of the municipality, property owners and developers. We are appreciative of the various reports of the Town of Carleton Place used here with permission from Jim McCready, RFP, chair of the board of directors of the Eastern Ontario Model Forest and longtime resident of Carleton Place.

C. Benefits of the Urban Forest

The Ontario Urban Forest Council (www.oufc.org) reminds us of the importance of the Urban Forest. “Our health and well-being are intricately interconnected with the health of our natural environment. Trees and forests are integral

components of healthy ecosystems that support healthy human populations.

Trees help to reduce smog and pollution in our cities by filtering out many airborne pollutants that have negative impacts on our health, such as carbon dioxide, carbon monoxide, lead, nitrogen dioxide, ozone, sulphur dioxide and particulates. These pollutants have been linked to heart disease, respiratory illnesses, diabetes and cancer.

A growing body of evidence suggests that human mental and physical health is closely associated with the health of our forest ecosystems. Consequently, poor environmental conditions may lead to an increase in the incidence of a wide array of illnesses. Forests and green spaces have conclusively been linked to a significant decline in stress, improved rehabilitation, faster hospital recovery rates, and a decrease in the severity of symptoms in attention deficit disorders.

Experts have determined that a minimum 30 per cent forest cover is required to maintain a healthy, sustainable ecosystem. “

Currently, forest cover is as low as five per cent in some regions of Ontario’s settled landscape, compromising the health of our ecosystems and their inhabitants. Efforts to enrich our forest ecosystems will contribute to the stability and resiliency of the ecosystems we inhabit. To enhance the health of our ecosystems and to better prepare Ontario to adapt to climate change, tree-planting efforts must involve both rural and urban initiatives.

Billions of dollars are spent annually on health care services to treat symptoms; however, comparatively little is invested in addressing the root causes of many commonly occurring diseases. Restoring the health and integrity of our forests, can be viewed as a preventative health measure and will contribute to our collective health and well-being.

The economic value of trees on a property value has long been recognized. “In one study, 83% of realtors believe that mature trees have a ‘strong or moderate impact’ on the salability of homes listed for under $150,000; on homes over $250,000, this perception increases to 98%.”—Arbor National Mortgage & American Forests

“Trees properly placed around buildings can reduce air conditioning needs by 30 percent and can save 20–50 percent in energy used for heating,” reports the USDA Forest Service.

Many towns and cities have been following the trend of planting native shade trees that will become part of the forest canopy.

Urban forests: An Important Part of Our Natural Heritage” can be found at www.ontario nature.org and provides further evidence of the values attached to a flourishing urban forest.

D. <u>Prescott Urban Forest Inventory</u>

In the late 1970’s with help from volunteers and our Boy Scouts, a full tree inventory was prepared and used as the basis of a yearly tree-planting program. Alignment of new sidewalks even gave in to precious street trees. Specially selected and carefully placed trees became part of downtown’s canopy.

Major changes in our urban forest came about in the development of the Harbour and in the small but interesting arboretum at the east end of the Millennium Heritage Trail. Parks Canada staff has the original research and inventory for the arboretum. We recommend a checkup of the arboretum and an action plan for this unique part of our Urban Forest.

In light of time constraints this time around a preliminary tree inventory was prepared by windshield survey. The Google Earth satellite images were also helpful in zeroing in on the neediest areas.

Prescott has a wealth of "heritage trees" based on their age, beauty, association, legends and traditions. Most residential streets have a substantial tree canopy. Sturdy shade tolerant and indigenous sugar maples are most prevalent with many such trees over a century old. Children in our community are tapping their backyard sugar maples and even potting up our heritage maples for sale.

There is also a variety of evergreens including Eastern White Pine and little leaf lindens, horse chestnut (introduced from Europe in early to mid-1800's), silver and red maples and a few oak trees.

Those residential, industrial and commercial streets that lack street trees should become part of a refreshed tree-planting program especially in those very few areas devoid of any trees at all. This is also especially true of the industrial "park" in the North West Quadrant of Prescott.

E. <u>An Action Plan</u>

The Communities in Bloom Committee recommends the following trees for a Prescott planting program. Trees must be grown from seed from plant hardiness zone 4b, 4a or 5a or seed zones 35 and 36. A good source of trees and shrubs suitable for our area is the Ferguson Forest Centre in Kemptville.

Recommendations for Planting follow.

F. <u>Species of Trees for Parks / Natural Areas in Prescott</u>[1]

- Sugar Maple – *Acer saccharum (*drier sites**)**
- Silver Maple – *Acer saccharium* (*large* planting locations*)*
- Red Maple – *Acer rubrum* (moist sites near the river)
- Red Oak – *Quercus rubra*

[1] *Adapted from: Jim McCready R.P.F Certified Arborist ON-0494A*

- Bur Oak – *Quercus macrocarpa*
- Hackberry – *Celtis occidentalis*
- Horse Chestnut – *Aesulus hippocast anum*
- White Spruce – *Picea glaoca*
- Norway Spruce – *Picea abies*
- White Pine – *Pinus strobes*
- Eastern White Cedar – *Thuja occdentalis*
- Tamarack – *Larix laricina*

G. <u>For Residential Streets/Residential Development Areas:</u>

- Sugar Maple – *Acer saccharum* (*large* planting locations*)*
- Red Maple – *Acer rubra* (*large* planting spot*)*
- Silver Maple – *Acer saccharium* (*large* planting locations*)*
- Freeman Maple – *Acer x fremani* (*large* planting locations*)*
- Red Oak – *Querus rubra* (*large* planting locations*)*
- Bur Oak – *Querus macrocarpa* (*large* planting locations
- Hackberry – *Celtis occidentalis* (*large* planting locations*)*
- Maidenhair Tree – *Ginko biloba* (male clone only)
- Honey Locust – *Gleditsia triacanthos* (small planting locations)
- Service Berry –*Amelanchier* (small planting locations)
- White Spruce – *Picea glaoca* (*large* planting spot*)*
- Norway Spruce – *Picea abies* (*large* planting locations*)*
- Tamarack – *Thuja occidentalis ((medium* planting locations)
- Showy Mountain- Ash – *Sorbus decora* (small planting locations)
- Flowering crab – *Malus* (small planting locations)

H. <u>For "Hard" Zones e.g. downtown streets:</u>

- Red Oak – *Quercus rubra*
- Freeman Maple – *Acer x freemanii*
- Hackberry – *Celtis occidentalis*
- Honey Locust – *Gleditisia triacanthos*
- Colorado Blue Spruce – *Picea pungens*
- Little Leaf Linden- *Tilia cordata*
- Amur maple – *Acer ginnala*

I. <u>Shrubs to Plant in Town of Prescott:</u>

- False Spirea – lovely creamy white plumes of flowers, grows quickly, will grow anywhere good for holding soils on banks.

- Spireas - bridal wreath (taller 5ft, white flowers), Goldflame, not Goldmound (3 ft. pink flowers, very attractive leaves all year) Anthony Waterer (3.5 ft. dark leaves, lovely deep pink flowers)

- Potentillas - wide variety, 3 feet, white or yellow flowers, very hardy

- Purple Leaf Sandcherry - can get tall, responds to pruning, but will grow into a nice shrubby tree if not pruned, maroon leaves.

- Nanking Cherry - will get quite large up to 7 ft. but easily pruned, round growth habit, white blooms, red berries.

- Burning Bush - 4-5 ft., red fall colour, branches break in very heavy snow.

- Flowering Dogwood – shiny red berries through fall and early winter. Crimson autumn colour.

J. <u>Guidelines When Working Around Trees in Prescott:</u>

Development can have a negative impact on pre-existing trees if proper measures are not taken to protect these trees. Changes made to grade, water table level, compaction, and drainage will impact the health and longevity of such trees. The following measures must be implemented to ensure tree survival during and after construction:

1. Before construction begins mark individual trees or stands with tree marking paint and flagging tape so all involved know what trees are to be protected;

2. Around each individual tree or stand of trees erect a snow fence or other barrier 1 meter high and supported vertically by T-bars at regular intervals. This fencing must be placed, if possible, at the drip line (furthest spread of outside branches). The purpose is to stop vehicle traffic from entering the root zone and causing compaction;

3. Maintain this fencing during construction and check at regular intervals to make sure it is still standing;

4. Place gravel, sand or preferably woodchips for a distance 2 metres outside of the dripline to a thickness of at least 7 centimeters. This will further help elevate the compaction of soil surrounding the fine feeding roots;

5. No stockpiling of material, refueling, parking of vehicles or repairing of vehicles is to take place within the 2 metres outside of the drip line;

6. When excavation must take place within the dripline care of the root system is essential. A trench should be dug by hand or with a root cutting (stump-grinder) or a stone cutting (cut-off) machine along the furthest reach of the cut. This is to ensure the roots are cut cleanly with no ragged ends so the roots have a chance to heal. When the trench is established, other equipment may be used to complete the work;

7. It is better to tunnel under a root system than to cut through it;

8. When heavy equipment is used during excavations, care must be used so not to compact the soil within the barricaded root zone;

9. When tree roots are cut and do become exposed during construction, water them immediately and backfill or cover with filter cloth or woodchips so the fine root hairs to not dry out. Ensure the chips or filter cloth is kept moist with a fine spray a number of times during the week and daily if hot dry weather is encountered;

10. Avoiding changes in grade will assist with the overall health of the tree during construction. Where grade changes cannot be avoided, the installation of retaining walls or tree wells must be considered for those trees worth protecting. An arborist should be consulted on the design of both.

K. Guidelines & Standards for Tree Planting for New Development within the Town of Prescott and for Conservation Plans[2]

The Town should require Conservation Plans and Tree Planting plans for all development including residential, commercial, and industrial uses.

L. Conservation Plan:

[2] *Courtesy of Jim McCready R.P.F./ ISA Certified Arborist*
December 1, 2014

The conservation plan will have a preliminary assessment by a qualified professional (certified arborist, registered professional forester or other qualified professional), which will determine stands of trees or individual trees on the property which warrant protection. This plan should consider such matters as:

- The existing health of the tree, grouping of trees or woodlot, hackberry and the quality of such and
- Its degree of sensitivity to grade changes, drainage disruption, changes in water table or any other factors, which may affect the trees.
- Measures that can be taken to protect the trees (tree wells)
- If trees cannot be protected, why not?
- Opportunities for tree planting to mitigate loss of tree or forest cover.

The conservation plan will identify how these trees will be protected both above and below ground, as it is important to protect the root systems from soil compaction.

The following measures will be undertaken to protect these trees:

1. The identified tree or trees to be protected will be fenced off, a minimum, to the drip line (furthest point of extension of branches) to protect the roots from soil compaction.
2. Above ground utilities shall avoid, where possible, the crowns of the trees.
3. Below ground utilities shall avoid where possible damaging the root system of trees. If utilities are to be placed below ground they are to be placed directly under the tree so not to damage the fine root hairs of the extended root system.
4. Tree roots that will be damaged must be cut cleanly to avoid ragged edges so they will heal properly. If exposed they must be moistened immediately and covered with moist material.
5. No equipment, trucks and storage of supplies shall be inside the fenced area.
6. No grading shall take place around the protected tree or trees.

In short the professional should be asking these questions:

1. Are there trees that can be protected due to size, rareness or they are a healthy stand that would add to the community.
2. If trees are going to be protected how this will be done during construction and after the project is complete.
3. If trees cannot be protected why not.
4. If trees cannot be protected what is the mitigating measure going to be for loss of trees. I.e. enhanced tree-planting program.

M. Landscaping Plans for New Development

The Planting plan will identify where additional trees are to be planted, which species and size of trees to be planted and how these trees will be planted and maintained.

The planting plan will identify:

1. *Where trees will be planted:*
   - The site plan must identify where trees will be planted.
   - At least one tree shall be planted for each residential lot developed unless a large number of trees have been removed for the development then an enhanced tree planting program will be undertaken.
   - Industrial and commercial development site plans shall incorporate multiple trees.
   - Prior to planting the developer must identify the location of underground utilities; present, planned and potential future locations.

2. *Species and size of trees to be Planted:*
   - Trees will be from seed from plant hardiness zone 4b, 4a or 5a or seed zones 35 and 36.
   - The developer will plant a 60 mm (2.5 ins) caliper deciduous tree or a conifer tree minimum height 2.0 m.
   - To avoid monocultures at least 4 deciduous and 1 conifer species will be selected from the list (Table 1) and approved by town staff.

N. Table 1 Species of Trees for planting by developers

	Deciduous	Conifer
Larger Trees for Larger Lots	Sugar Maple (Acer *saacharum*) Red Maple (*Acer rubrum*) Silver maple(Acer saccharium) Freeman maple(Acer xfremani) Red Oak (*Quercus rubra*) Bur Oak (*Quercus macrocarpa*) Hackberry (*Celtis occidentalis*) Freeman Maple (Acer *x fremanii)*	White Pine (*Pinus strobes*) White Spruce (*Picea glaoca*) Norway Spruce (Picea *abies*) Blue Spruce(developers are encouraged to use this species on the harder sites i.e. Hwy 7)
Medium Sized Trees	White Birch (Betula *papyrifera)* Little Leaf Linden (*Tilia cordata)(*developers are encouraged to use this species on the harder site i.e. Hwy 7)	Eastern White Cedar (*Thuja occidentalis*) Tamarack (Larix *laricina*)
Smaller Trees for Smaller Lots	Showy Mountain Ash *(Sorbus decora)* Serviceberry (*Amelanchier*) Crabapple (*Malus*) Honey Locust (Gleditisia *triacanthos)*	

O. General Tree Planting Guidelines

The International Society of Arborists, the Canadian Nursery Trades Association or Landscape Ontario standards of planting and maintenance are to be followed:

- Excavate to a depth 200mm deeper than the height of the root ball, with a width 750 mm greater than the root ball.
- Loosen the planting hole to a depth of 200mm
- Loosen burlap and cut away minimum at least 50% of the burlap without disturbing the root ball (if in a wire basket cut away as much of the wire basket while the tree is in the hole)
- Place plant material to a depth equal to the depth they were originally growing in the nursery.
- Tamp soil around the root system in layers of 150 mm to eliminate air pockets. When 2/3 of the planting soil has been placed file the hole with water. After the water has penetrated into the soil, complete backfilling.
- Build a 100mm deep saucer around the outer edge of the hole to assist with watering.
- The hardwood trees will be staked following International Society of Arborist standards.
- The trees will be mulched to a depth of 10 mm filling the saucer leaving 50 mm free around the trunk to avoid trunk rot.
- The trees will be watered one week after planting and every 2 weeks thereafter, pending weather conditions, until the area developed is no longer the responsibility of the developer.

P. Best Management Practices When Excavating Near Tree Roots

- When excavation must take place within the dripline care of the root system is essential. A trench should be dug by hand or with a root-cutting (stump-grinder) or a stone cutting (cut-off) machine along the furthest reach of the cut. This is to ensure the roots are cut cleanly with no ragged ends so the roots have a chance to heal. When the trench is established, other equipment may be used to complete the work.
- When tree roots are cut and do become exposed during construction, water them immediately and backfill or cover with filter cloth or woodchips so the fine root hairs to not dry out. Ensure the chips or filter cloth is kept moist with a fine spray a number of times during the week and daily if hot dry weather is encountered.

Q. Conclusions:

The Steering Committee for Prescott's Communities in Bloom 2015/2016 accepts the many values of the Prescott Urban Forest and recommends a continued effort on behalf of our Trees.

R. References

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