HARBORD VILLAGE
RESIDENTS'
ASSOCIATION
Box 68522, 360A Bloor St. W.
Toronto, ON M5S 1X1

To: Infrastructure and Environment Committee
Re: IE11.1
Tree Canopy Study 2018 Jan. 7, 2020.

Harbord Village Residents' Association is pleased to see City Forestry's report on the state of the City's tree canopy is trending positive. Regrettably, we cannot share in the celebration. We have bracing news from our neighbourhood, challenges ahead, and hopefully help from the City.

Our neighbourhood is a low-rise Victorian community, about .6 sq. km, framed by Bathurst, Bloor, Spadina and College. Our association sponsored and our residents worked on two tree inventories in our neighbourhood, the first in 2007, the last in 2017. Graduate students from U of T forestry and from Ryerson conducted the research and have now made re-planting recommendations. (James Steenberg's research paper on the link between tree loss and building permits in Harbord Village is actually part of the City report.)

We embarked on the inventories through concerns that our urban forest was under pressure. The results showed our part of the urban forest is in serious decline.

Over the past ten years, our inventories show Harbord Village lost 1371 trees—over 30% of its trees, due to natural mortality, construction and renovation impacts, failure to replant, impermeable surfaces for parking and relatively few to the emerald ash borer (another U of T study done in a collaboration between U of T and HVRA).

The City report shows we have the second highest neighbourhood canopy loss in Toronto. Our latest report from U of T shows canopy cover sits at 21.9%. Your report suggests this represents a loss of 22.3%.

We are not King-Spadina—home to towers. We are closer in-built form to Palmerston, the Grange, the Annex, Cabbagetown, Seaton Village. We are a low-rise neighbourhood which is mostly row housing, few detached, the rest Victorian semis. We have front and backyards available for planting. We can and should be part of Toronto's natural ecosystem.

The combined data reflects the fact our large street trees, Norways, Silvers, Horsechestnuts, are dying and too often not replaced. And we will lose more: 25% of our trees are surrounded with over 50% hard surfaces, 12% of our trees are surrounded by over 90% hard surface. This sets the stage for at least some unnecessary future losses.

Seizing opportunities:

Of the close to 1400 trees that died or were removed, 700 were on City property which includes City-owned front yards and street trees.

This creates an opportunity for us to work with the City to design programmes that would be useful for HVRA and other low-rise communities to have a look at zoning bylaw and planning rules to ensure trees are no longer casualties of development and that we are not losing resiliency out of carelessness or neglect. There should be no impediment to the City planting trees on City land. It will inspire local homeowners to do the same.

In their 2019 management plan for the Harbord Village urban forest, the U of T foresters see Harbord Village and the City working together to create “a neighbourhood scale plan to increase tree canopy dramatically. The plan should be scalable, adaptable and sustainable, while considering the threat of climate change and the urban heat island.” To reach the goal of 40% in 20 years, would require planting 4,800 trees and should include imaginative treatment of urban land use, including parking lots and repurposing lost spaces, ensuring City street flanks and laneways are treed.

Why HVRA?

We completed two past tree-planting initiatives with the support of not-for-profits. In 2008-9, 2019, at least 200 trees were planted and nurtured on private property. We have a squad of over 50 resident volunteers trained and committed to planting and a website ready for publicity about planting initiatives (https://harbordvillage.com/)

We are working with TransformTO to design a programme to encourage residents to work toward a netzero carbon target for our community, an initiative that, in our minds, includes trees We are working with TOCore on a plan to create a new treed boulevard on a single block of one of our streets. Five years ago, our Green Master Plan passed by TEYCC, declared an intention to reclaim City boulevards for trees and to green our lanes. Five years later, we might have as many as 8 inground treed bumpouts for traffic calming. We have a meeting scheduled with Forestry in the spring, and hope it bears fruit.

So far, no matter what we are doing, we are losing the race.

Council and City Forestry can help.

Best,

Sue Dexter
Board member HVRA
97 Willcocks St.
Toronto, Ontario, M5S1Ci9
Landline: 416-964-5639
Cell: 416-985-0222

Attached: HVRA 2018 40% Canopy Enhancement proposal, along with the inventory update (2018) and recommendations going forward (2019).

HARBORD VILLAGE
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Toronto, ON M5S 1X1

Harbord Village Canopy Enhancement Initiative March 18, 2018.

Harbord Village is a significant contributor to the tree canopy in Downtown Toronto. Our contribution to the City's urban forest amounts to 4000 trees in an area of 1 square km. This is all the more remarkable as we represent a dense urban neighbourhood near the centre of the City, extremely underserved in terms of parkspace. But changes in built form, species selection and environmental stresses are reducing our canopy cover.

Harbord Village was once a place of gardens, trees and orchards.

We are proposing a Canopy Preservation and Restoration Project to expand tree coverage and promote tree health in a typical low-rise Downtown neighbourhood.

This project would mandate HVRA, University experts, the private sector and City departments to identify policies to promote and enhance the urban forest in a dense urban context. These policy changes could include

- incentives for soft surface landscaping;
- early plantings to establish young trees near those reaching the end of their lives;
- alterations to zoning and building approvals to protect the urban forest;
- increased sensitivity of Committee of Adjustment decisions on development applications negatively affecting mature trees;
- fast-track approvals for tree-preserving renovation;
- exploration of rooftop greening initiatives; and,
- local awareness programmes to foster conservation and restoration of the urban forest.

Harbord Village is uniquely placed to assist the City in meeting its canopy objectives. In the summer of 2018, Harbord Village will complete a ten year-review of our tree inventory. This update builds on work HVRA has done, with the assistance of the University of Toronto Forestry Department. Once complete, the inventory will have captured all trees, their condition, and location, and identify trends. This summer's data will put us in a position to assess what has been happening to this urban forest, including:

- Population,
- Species, native or non-native
- Health
- Cause of injury or mortality
- Effectiveness of replacement plantings in species mix and size
- Canopy estimates

The findings could be extrapolated to include

- Contribution to air quality
- Amelioration of heat island
- Stormwater abatement

The inventory sets a baseline for future programmes in our neighbourhood.

The Canopy Restoration Project would be a logical extension to the Harbord Village Green Master Plan, which was developed through a collaboration between HVRA and Councillor Joe Cressy's office. To date, the Plan serves the City's policies around stormwater abatement. Residents have been working with the City's Transportation Department to intercept stormwater by cutting and planting street bumpouts in the pavement at a number of Harbord Village intersections starting in 2018. Next phases include the greening of lanes and the paved City property flanking businesses on College and Harbord. (see link at appendix a).

Canopy enhancement is critical as we also see local development encroaching on soft landscaped space and the loss of mature trees to same-age plantings 75-100 years ago. The greenspace deficit in our community will worsen with the population increases that are forecast for the Downtown.

The private sector is a critical element in fulfilling the City's mandate to increase the canopy, since most of the city's trees are on private land. Collaborative planning between the private sector and the City will be vital to fulfilling the City's goals. With an active gardening community, we are in a position to implement programmes. While the Green Master Plan includes greening lanes and City flanks; the Canopy Preservation and Restoration Project would expand its mandate to improve performance in the private property between lane and street.

Best,

Sue Dexter,
for Board,
Harbord Village Residents' Association.

97 Willcocks St.
Toronto, Ont.
M5S1C9.

a) https://harbordvillage.com/projects/greening/treeing-the-village/

Harbord Village Tree Inventory

2018 Preliminary Report

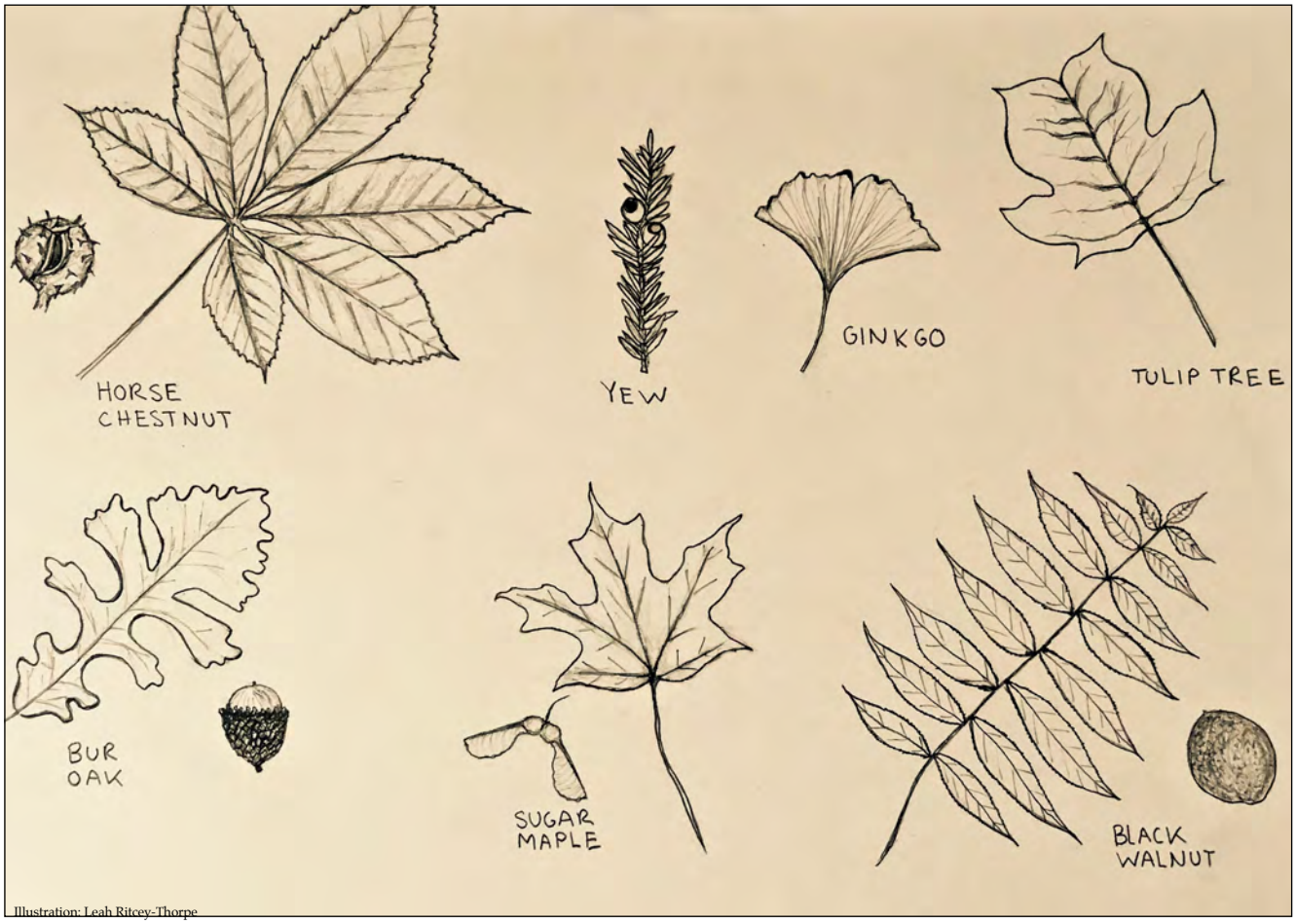


Illustration: Leah Ritcey-Thorpe

Author: Leah Ritcey-Thorpe
Field research completed by: Leah Ritcey-Thorpe, Zhuoran Gong and Christian Rempe.

Sandy Smith, Forestry Department, University of Toronto
Harbord Village Residents Association

Introduction

With over half of the world's population living in urban areas (UN DESA, 2018), it has become vital to monitor, aid and grow one of our most valuable resources: urban forests. Urban forests contribute distinctly by providing cultural, ecological and economic benefits (Escobedo et al 2010). Urban forests service cities in many ways from improving air quality and absorbing pollutants, sequestering carbon dioxide, regulating temperature, reducing stormwater runoff and more (Millward & Sabir 2011).

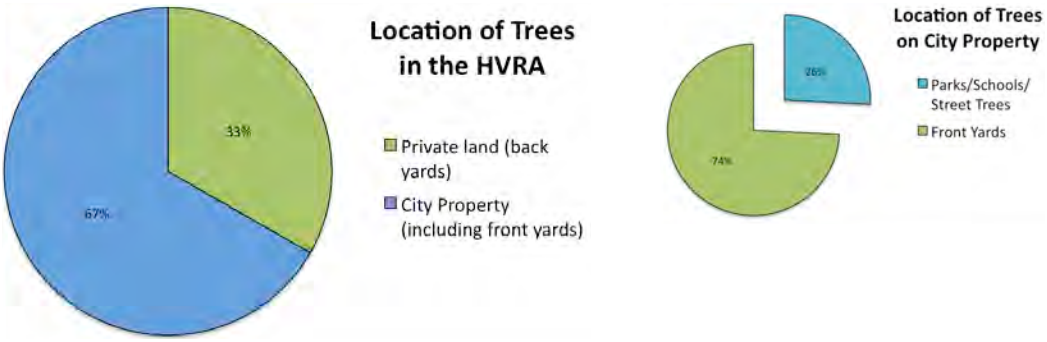
The goal of the 2018 inventory project was to produce a completed tree inventory of the Harbord Village. The inventory follows the Neighbourwoods protocol and includes the types of species, their DBH (diameter at breast height), height and width measurements, simple assessments of health, coordinates, and more. The inventory includes schools, parks, alley ways, back yards, front yards and street side property. In addition the locations of plantable spaces were recorded, and not purposefully planted trees (some may say "weed" trees) were inventoried. Shrubs such as lilacs and roses of sharon that exceeded 5cm in DBH were also included on the inventory. The following paper will report on any clear trends and interesting findings of the 2018 project and includes final maps of the trees.

How Many Trees Are There?

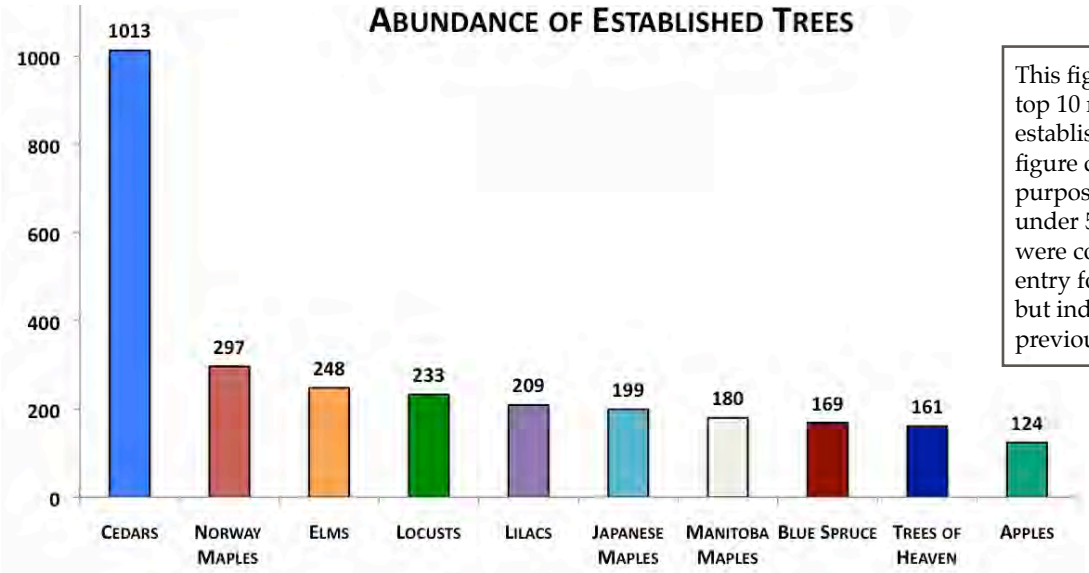
The Harbord Village is home to an estimated 4493 trees. This number does not include shrubs under 5cm DBH and not purposefully planted trees under 5cm DBH (such as elms and trees of heaven that pop up in alleyways). This is because these trees may be removed at any time. All trees over 1 m in height are included in this number.

Where Are They Located?

Most of the trees in the Harbord Village are located in front yards and back yards. An estimated 33% of trees are located in backyards. Of the 67% of trees located on city property, 74% are in front yards. An estimated 51% of the dead and removed trees are located in back yards.



What Kinds of Trees Are There?



This figure represents the top 10 most abundant established trees. This figure does not include not purposefully planted trees under 5 cm DBH. Hedges were counted as a single entry for 2017 and 2018, but individually for previous years.

It is no surprise that the most popular tree in the village is the cedar. Cedars are popular nursery items, and are often used to create hedges. Cedars were counted as hedges in the inventory only if there were 5 or more trees planted in a row for 2017 and 2018. It is important to note that the cedars often planted are small cultivars such as the emerald cedar. Some of these small cultivars can be considered more shrub-like than tree-like. Cedars may be more abundant due to their size and popularity as a hedge.

The most abundant species of tree is the Cedar. The second most abundant tree is the Norway Maple.

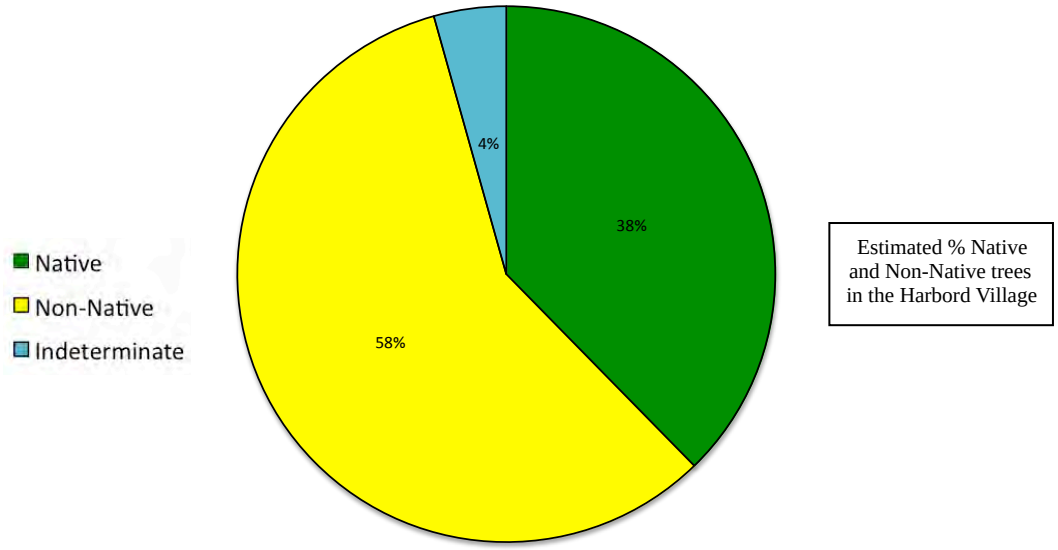
The next most abundant tree, and perhaps a better representation for a tree than many of the cedars, is the Norway maple. Norway maple is considered an invasive species in many urban areas (Lapointe & Brisson 2011). Norway maple is also non-native, as many of the top 10 most abundant species are.


canadiantreetours.org

Not sure if it's a Norway Maple or Sugar Maple? Look for a milky sap when the leaf stalk is broken in the summer.

Native vs Non-native

An estimated 58% of the total urban forest is non-native. Estimated using information from the Ontario tree atlas. Available at ontario.ca

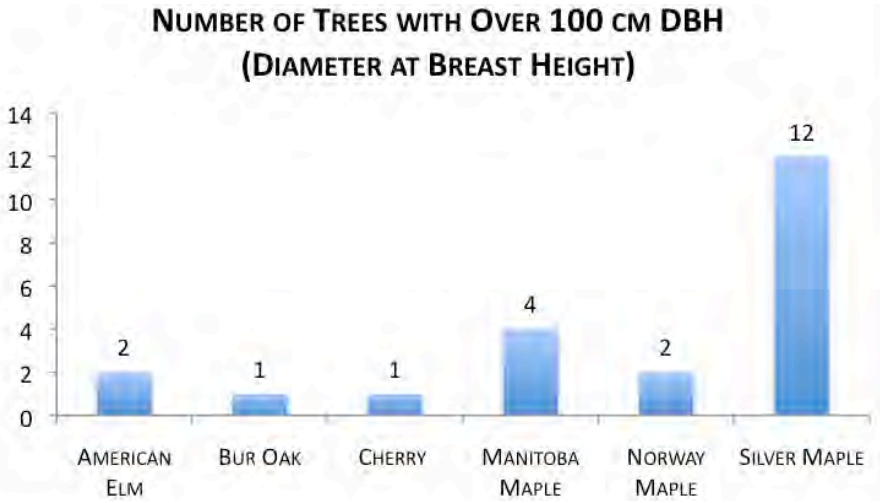


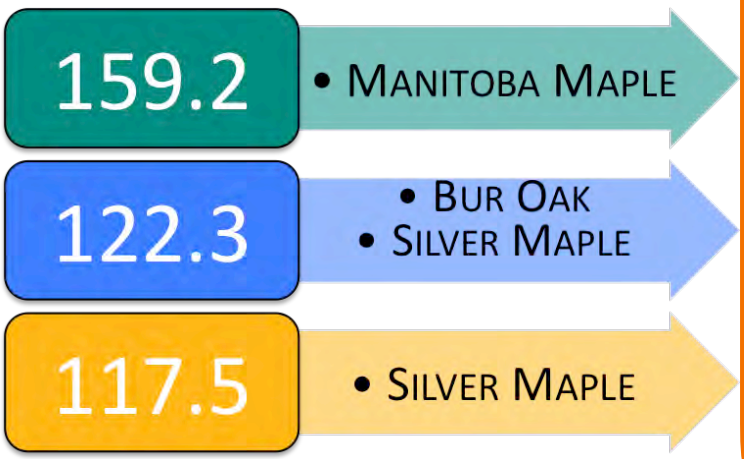
Age

This is an estimation of the age of the trees in the harbord village based on DBH and adjusted for species. This figure does not include not purposefully planted trees under 5 cm DBH.

Size

This figure represents the number of species with over 100 cm DBH. Note that 12 of the largest trees are silver maples.



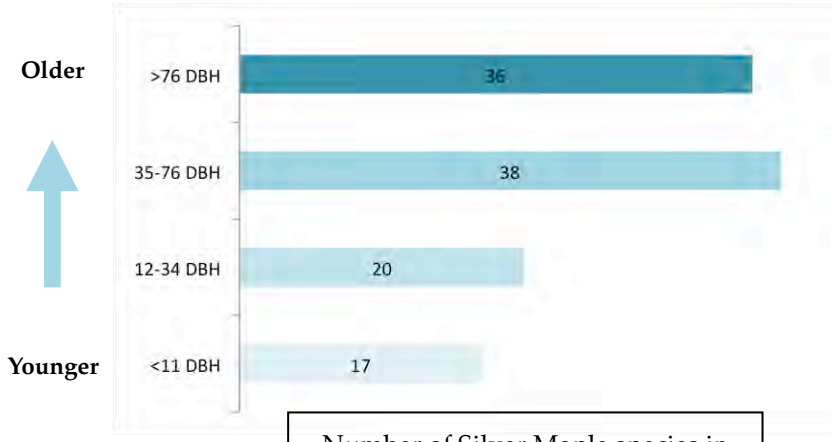


<u>These are the largest trees in the harbord village!</u>

159.2 cm DBH:
- Manitoba Maple, back yard, Harbord St.

122.3 cm DBH:
- Bur Oak, back yard, Brunswick St. (note: DBH likely larger but could not measure properly)
- Silver Maple, Central Tech School

117.5 cm DBH:
- Silver Maple, front yard, Robert St.

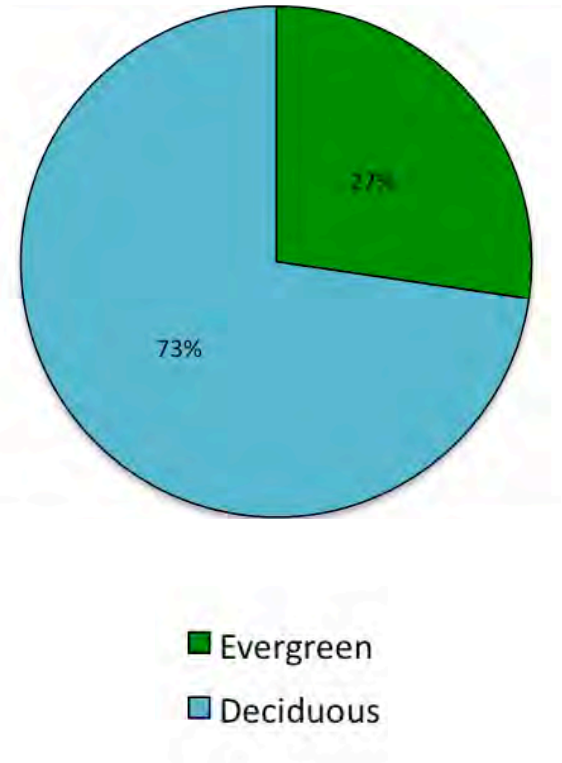


Number of Silver Maple species in the village and their respective DBH.

A trend the team has observed is the planting of many ornamental species and dwarf species.

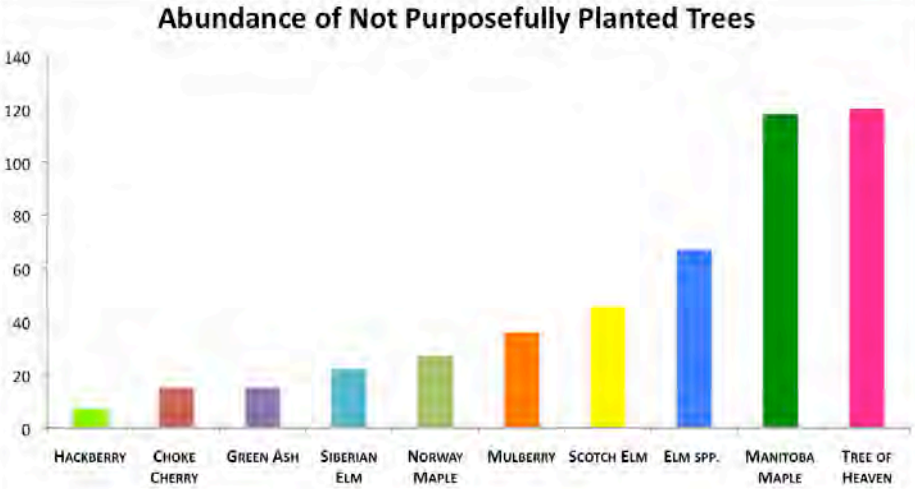
Silver maples make up many of the largest species in the village. However, many are old trees that have reduced canopies as a result of heavy trimming and cracked limbs and fewer new silver maples are being planted.
The silver maple is an important native species that processes many ecological and economical benefits (Millward & Sabir 2011). Residents may be deterred from planting large species such as the silver maple due to fear of falling branches and upsetting neighbours. A possible alternative medium to large sized tree are columnar species such as oaks and beeches that are tall but remain narrow.

Evergreen vs Deciduous



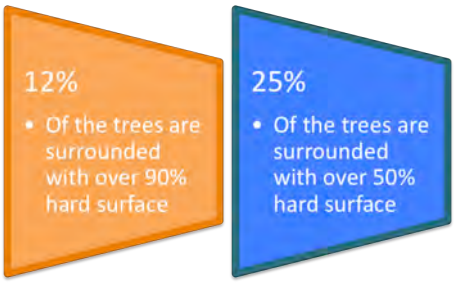
The majority of trees in the Harbord Village are deciduous.

Not Purposefully Planted Trees



This figure represents the number of not purposefully planted trees over 1 m in height in the Harbord Village. These are trees that have popped up in front yards, alleyways and elsewhere of their own volition. This data may be used to quantify how many not purposefully planted trees are cut down and how many survive. Of the trees that were inventoried, Trees of Heaven and Manitoba Maples were the most numerous. Elms were also abundant, and if grouped together become the most numerous.

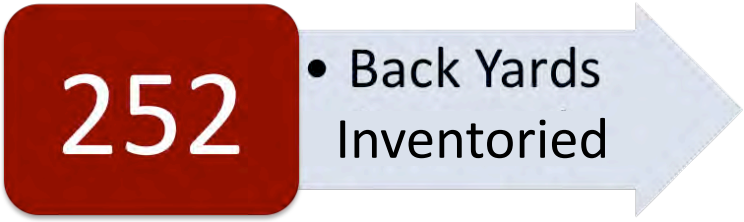
% Hard Surface



Hard surface is impermeable material covering the roots of trees. 25% of the trees are surrounded with over 50% hard surface.

Private Land: How Many Back Yards Did We Inventory in 2018?

These are the trees that we were not able to record information on this summer.



A total of 252 back yards were inventoried in the summer of 2018. We want to thank the residents of the harbord village and the HVRA for facilitating this project, and welcoming us into their yards.

Maps

Completed Inventory: The final map includes the locations of all of the living trees in the harbord village. It also includes the location of dead or removed trees, and not purposefully planted trees.

Largest Trees: This map represents the location of the largest trees in the village based on DBH. Trees with 90 cm DBH and over are included.

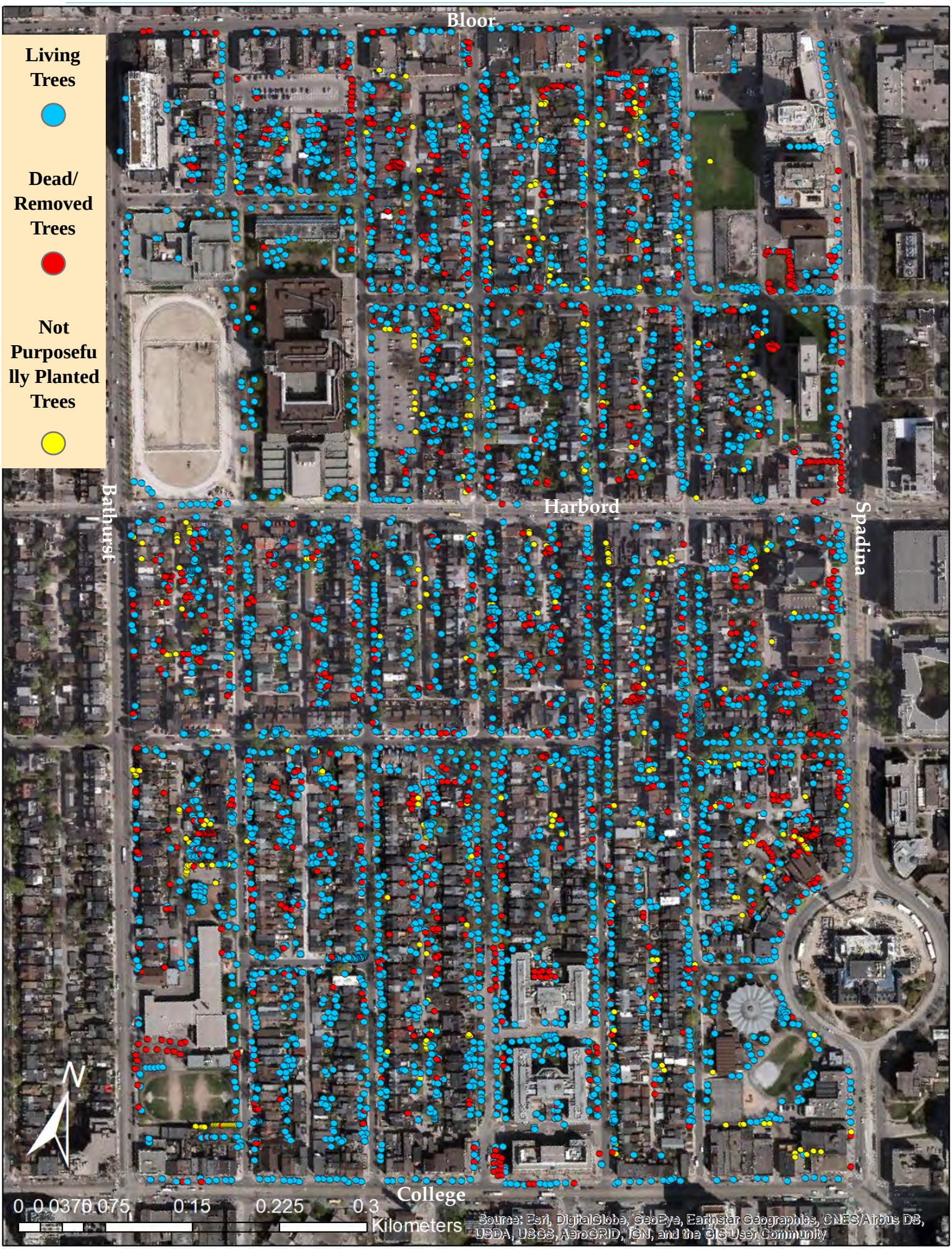
Ash Trees: This map illustrates the location of ash trees.

Fruit Trees: This map shows the locations of all of the fruit trees. Among this list are **121 mulberries, 58 tree form serviceberries, 55 pears, 55 apples, 39 cherries, 14 apricots, and 19 plums**. The harbord village is full of fruit!

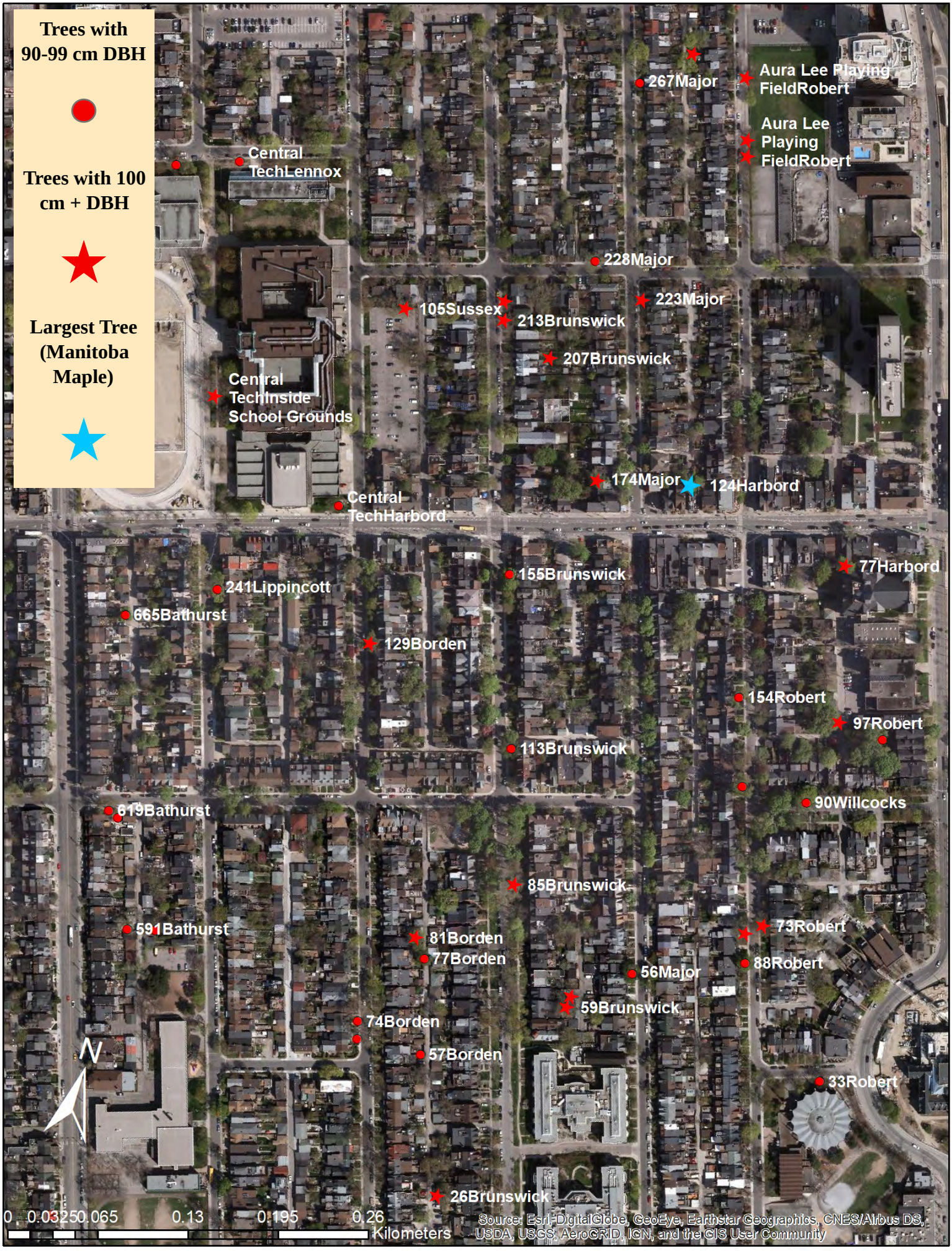
Plantable Space: This map shows the location and estimated size of available plantable spaces. Plantable space was only evaluated for front yards and street side property. Parks, schools and back yards were not included. Extra small plantable spaces are small sections of land suitable for small shrubs. Small spaces are suitable for shrubs and small trees such as dogwoods, Japanese maples, elderberries or shrub serviceberries. Medium spaces are suitable for medium sized tree species such as columnar beech trees, some weeping species, apples and crabapples, magnolias, and smaller maple cultivars. Large spaces are suitable for larger species such as maples, elms, birches, and oaks. Extra large spaces are spaces with a lot of room for root growth and are suitable for most large species.

Unique Trees: This map provides the location of any unique species. Included in the list are the largest and oldest smoke bushes, the largest elderberry, and the largest golden chain tree (laburnum). In addition, species that were rare in the inventory are mapped. Note the two dawn redwoods (metasequoia).

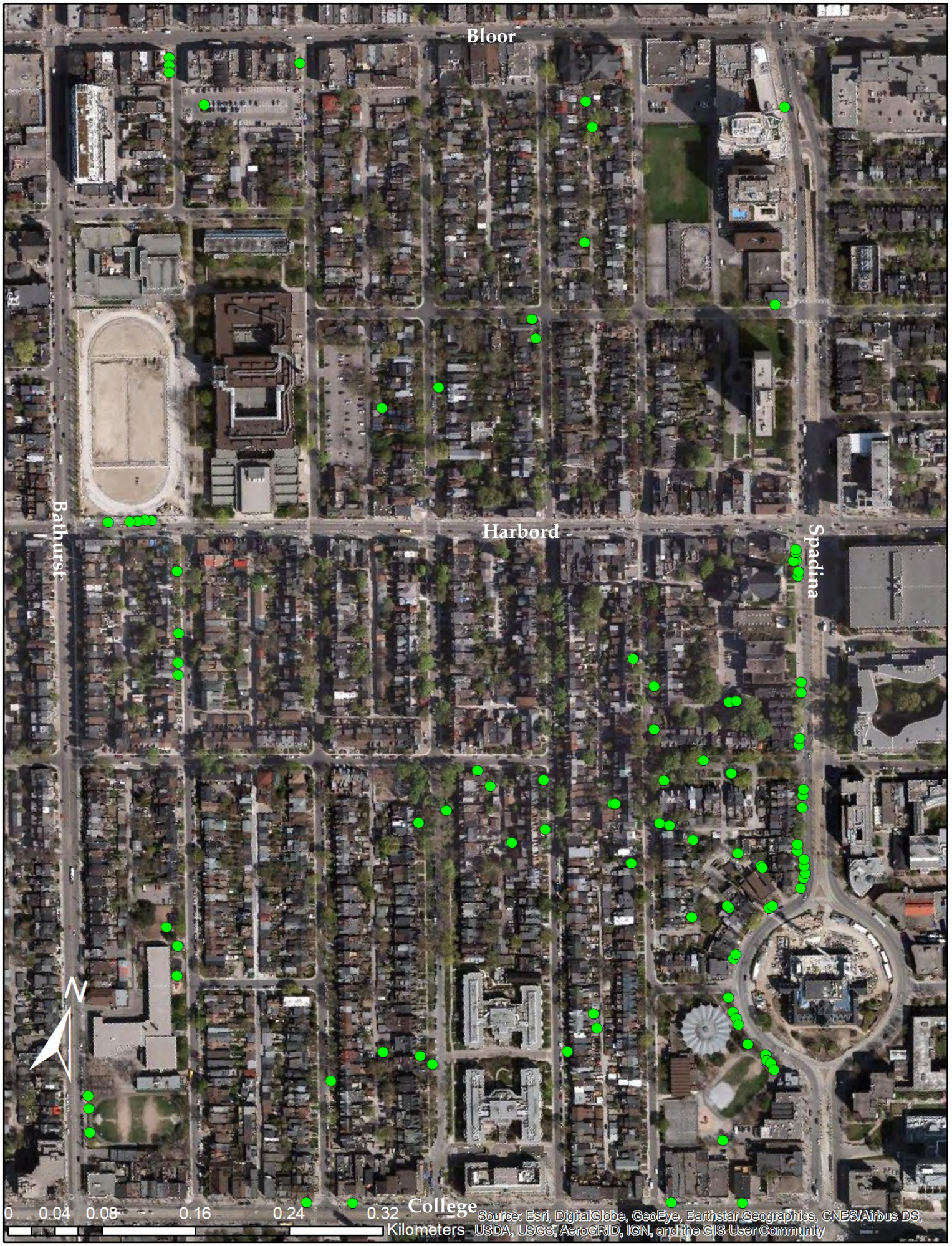
Completed Inventory



Largest Trees



Ash Trees


Bloor
Harbord
Bathurst
Spadina
College
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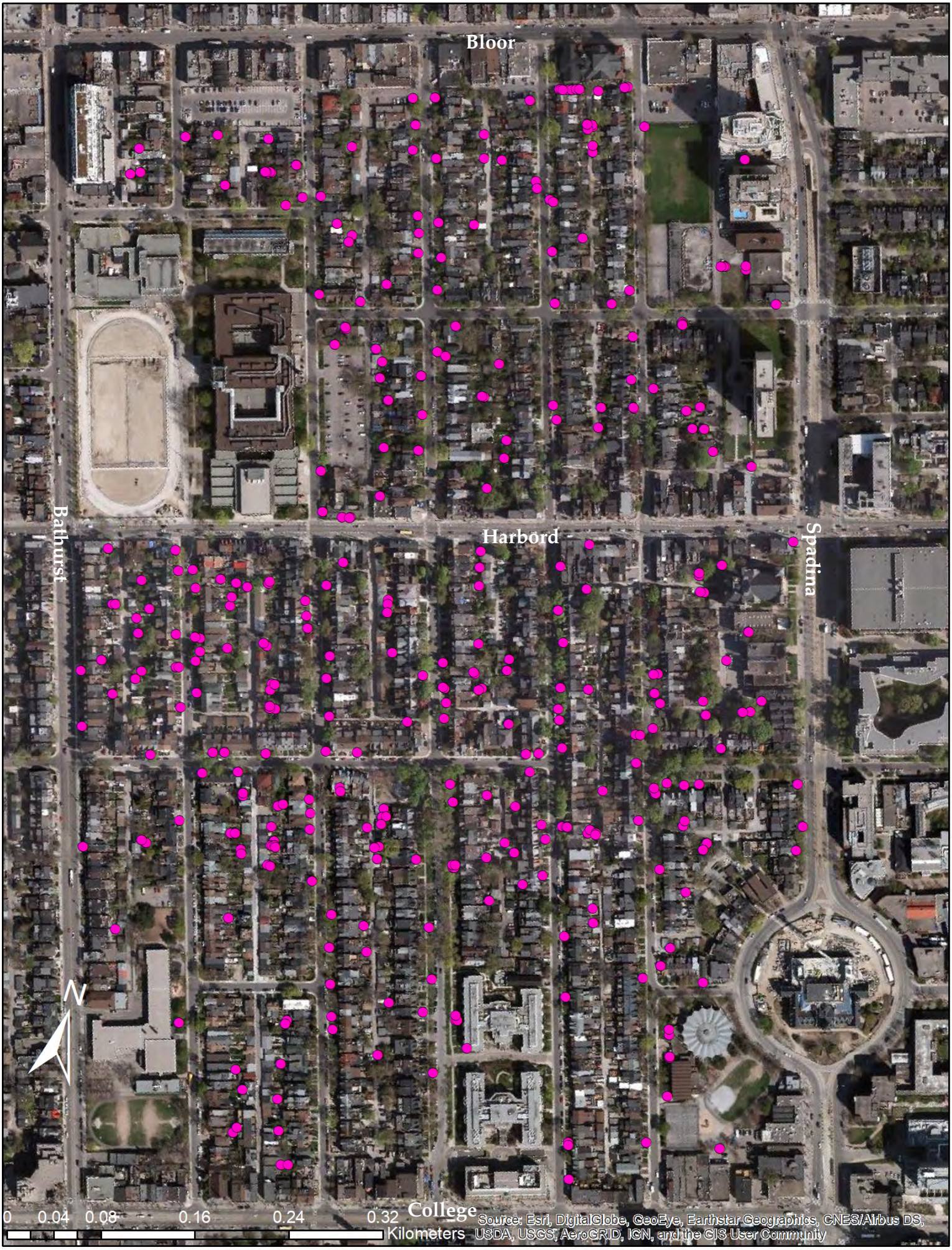
Kilometers
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Fruit Trees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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Plantable Space

Unique Trees

Many Thanks to the HVRA

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Reaching 40% canopy cover in Harbord Village: establishing the basis for pilot project

Mamta Goyal, Mariaelena Guarrasi, Johnpaul Loiacono, Yichao Zhou

UNIVERSITY OF TORONTO
JOHN H. DANIELS FACULTY OF
ARCHITECTURE, LANDSCAPE, AND DESIGN

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Executive Summary

Harbord Village (HV) has grown rapidly over the past few years. The demand for more housing, infrastructure, parking lots and so on has put tremendous pressure on the urban forest. Coupled with problems such as pests, invasive tree species, and climate change, it is extremely challenging to achieve the City of Toronto's goal of 40% canopy cover while maintaining the health of the urban forest.

In order to improve the canopy cover of HV, while coping with various difficulties, an Urban Forest Management Plan (UFMP) is needed and to prepare one in a resource capped environment, at the neighbourhood scale, will require creative solutions and the city's direct involvement. To gain a more complete picture of HV's urban forest, we conducted field visits to the neighborhood, consulted with the Harbord Village Residents' Association (HVRA), combined with two tree inventories reports (2007/2008 and 2018) and a strategic management plan (2007), to put together the basis for a pilot project to guide HVRA when approaching the city.

Additionally, this report includes some coarse research including literature and policy review, as well as the reporting of the existing canopy cover of HV and an analysis of the existing problems challenging HV . Finally, we conducted a high-level planting analysis and determined the potential areas to plant trees and integrated it into a discussion concerning HVRA's ambitions to implement a pilot project.

Preamble: Setting the Context for the Report

This report is intended as a final, cumulative report to the work that has been done to date in Harbord Village (HV). This work has happened over decades and consists of two tree inventories (2007/2008 and 2018), a strategic management plan (2007), published literature (2015) and the work and support of the Harbord Village Residents' Association (HVRA) to date, which began in the 1960s. This report will provide HVRA with a realistic approach and serve as a precursor to a future fully realized pitch to the City of Toronto for a pilot project to attain a 40% canopy cover. We don't believe a 40% canopy cover is achievable in HV using traditional efforts. The support of all landowners, not just homeowners, is required, and the effort and approach will need to rethink the way things are done like the density of tree planting and will require aggressive efforts from the City of Toronto that could involve the need to purchase lands and change established standards (particularly around parking). The pilot-project-sell will have to be balanced with these concerns. This will not be an easy assignment for HVRA.

Additionally, this is not considered a vulnerable neighbourhood; there is wealth and a relatively high canopy cover present. Given that HV may not be considered a priority area for many decision makers, obtaining a political champion to lead the charge may be difficult, especially as the city wards are now larger in the City of Toronto and city councilors represent many more neighbourhoods. The balancing act and convincing needed for public funding for an effort such as this is now that much harder, given the changes to the city's structure. However, there is ample public policy support, which is not surprising, including literature and other case studies of urban forest management plan approaches and/or pilot project success stories. And, the neighbourhood tree inventories can provide empirical evidence of serious canopy cover decline so there is urgency in this request to the city. Additionally, creative approaches, where we rethink the existing city programs and mandates, like the use of the Chief Innovation Officers (and his office) may become one such opportunity (this will be discussed further).

Finally, this report will provide a coarse study of the neighbourhood and build off some of the green strategies and reports prepared to date. With the use of the existing tree canopy cover layer provided by the University of Toronto, Forestry (a GIS layer), we are providing HVRA with a realistic layout of the potential locations for additional tree establishment, which will include a list of recommendations. A sample block plan will be provided across a 20 year time horizon to show the type of ambitious planting strategy needed to approach the canopy goal. Finally, priorities will be established to set HVRA with a focused direction.

Background

HV is a victorian era neighbourhood in the core of downtown Toronto. It has a rich community and is scattered with commercial buildings, restaurants, independent businesses, and residential areas. In the 1960's, a residents' association was formed, called the HVRA, which works towards preserving the neighbourhood's stability, character, and quality of life. One of the major goals for the neighbourhood and the HVRA has been to increase the canopy cover and overall green spaces in the area. Many residents in the neighbourhood are aware of the many benefits that green spaces provide; higher property values, reduced crime, a feeling of well-being, water retention, temperature regulation, and cleaner air being among them. However, many residents of the village are still averse to having trees on their property, and, paired with development pressures from the city, the urban forest in the neighbourhood has been suffering. Thus, the HVRA launched two projects; "Greening the Village", and, "Treeing the Village" to achieve their goals of a greener neighbourhood. This involved partnering with the nearby University of Toronto to have student conduct two tree inventories, ten years apart, an Urban Forest Management Plan, and an Emerald Ash Borer Management Plan. The latest tree inventory shows a drastic reduction in the amount of trees (a loss of over 30%), and the neighbourhood currently sits at a canopy cover of 21.9%. Because of the City of Toronto's goal to reach a canopy cover of 40%, the HVRA believe that an ambitious goal of a 40% canopy cover in the neighbourhood is ideal.

Policies, Guiding Documents, and Plans

This section of the report is meant to provide a coarse review of policy and the related plans and guidelines that support canopy cover growth. In doing so, we also identified documents that we wanted to highlight as, perhaps, non-traditional references, for the purposes of this report (Appendix 1 provides notes of the policies reviewed).

The province sets the tone in their Growth Plan (2017) by identifying the need for resilient communities, not only through more compact development, but also by improving the quality of life and subsequently human health, through low-carbon communities that integrate the use of green infrastructure. And there are many co-benefits including stormwater management among others we will describe in the report. If we look at the City of Toronto and other municipalities in the Greater Toronto Area (GTA), there is an access/equity to green space problem (Hamilton & Sawka, 2019; Garrett et al., 2019) and similarly, at a smaller scale, HV currently does not have access to high-quality green spaces or parks in the community. What also arises in the Growth Plan is the use of the word "communities" and therefore to us, the scale at which some of these problems can be tackled. Similarly, the Provincial Policy Statement (PPS; 2014) writes about the promotion of efficient land use development for biodiversity while considering the impacts of the changing climate. The PPS (2014) then dictates that the municipalities should prepare for these inevitabilities, like climate change, in their official plans, so we turn our focus to the local, below.

Addressing the urban forest without considering the land use planning framework and its policies (Phelan, Hurley, & Bush, 2018), would be irresponsible. The City of Toronto's city-planning Strategic Plan (2013-2018), has the use of "green spaces" built into their vision. The city and its staff recognize the importance of green space in our quality of life. Furthermore, the charter statements in the strategic plan discuss the importance of embracing innovation when it comes to addressing climate change by taking action like broadening participation and partnering with the public. They also identify that they are looking to do this in more resourceful and efficient ways. In the city's OP, we know that the canopy cover is valued and encouraged to be protected (3.4), however another section of the OP also provides policy on "Great City Campaigns" (5.3.5) and one of the key areas focuses on greening the city. These campaigns include partnerships and alliances that are associated with reinvestment in social, cultural and environmental resources. The urban forest ticks all these boxes.

In their Tree Planting Strategy (2016) the city recognizes the importance of the urban forest, and estimates that it provides benefits equivalent to $16.9 million in pollution filtration, $10.2 million in energy savings related to temperature regulation, and $1.1 million in carbon sequestration each year. They also recognize non-quantifiable benefits provided by trees, including flood protection and erosion control, and contributions to human physical health. The strategy states that the recommended tree canopy to maximize these benefits would be between 30%-40%. The city's commitment to expanding and sustaining the urban forest, as outlined in this strategy, should provide support to a pilot project to increase canopy cover in HV.

For us, Toronto's Resilience Strategy (2018), a document more recently prepared by the city to successfully navigate challenges like climate change, can be the basis for support of a rethink (a novel approach) to address the city's broader canopy goal of 40%. One of the actions of this plan are to prioritize the city's tree planting strategy, forest management plan and parkland strategy to help expand and protect the city's canopy. Additionally, they are looking to establish a framework for collaboration of green and blue infrastructure to further advance the said action. While this proposed pilot may not be the project to collaborate green and blue infrastructure, this pilot project could be a step in developing a framework on how communities around the city can strategically and systematically green themselves while contributing to the city's canopy goal. Additionally, the plan calls for finding ways to increase green projects and link projects by linking/creating corridors; we don't think linking can happen without addressing residential, community greening.

The resiliency plan continues by identifying focus areas, including people and neighbourhoods, a scale in line with the HV approach we are taking here. Through empowerment of the neighbourhood and by creating resilient neighbourhoods, the plan recognizes this can lead to a resilient city. They recommend this through the development of neighbourhood capacity building programs (although this may be referring moreso to economics, we can reframe it in HV). Additionally, recommendations are made around integrating climate change resiliency into land use planning policies further, like through the development of a neighbourhood scale standards, which can then be scaled-up. We think

these recommendations can easily become part of the pilot project for testing and it shows the benefits this pilot project can therefore have on the entire city.

Plans and guidelines like the city's green street technical guidelines (2017) and the complete streets guidelines, highlight green infrastructure design principles and discuss the obvious benefits of low impact design and technical ways of reducing run-off while making considerations for green infrastructure. But they also discuss the importance of partnerships (s. 4.5; Green Street Technical Guidelines, 2017) like community groups in helping catalyze and monitor. The thought here was that these guidelines could help establish some support for rethinking the laneways, however so much is happening in Toronto's laneways today, like plans for housing. And the reuse and thinking behind them are quickly evolving, perhaps for the better. There are initiatives like greening the laneways that are a step in the right direction but they are not addressing canopy cover. The laneways will be a difficult section of the community to address, even though we see opportunity in them. They will be discussed further in this report. A lot of technical aspects will have to be addressed to consider the laneway as significant canopy cover opportunities.

The review shows the obvious support for green infrastructure across many pieces of legislation, policies or plans - we did not highlight all the particular sections in this write up (see Appendix 1). Perhaps more importantly, because it was not as apparent, this review also demonstrates some opportunities for partnerships and approaches at the neighbourhood scale to test applications for future use in addressing the canopy cover goal.

20-year Plan

This plan will be discussed in more detail under the findings section of the report when we present the layout of future tree establishment but the idea was that the neighbourhood be separated into planting blocks, which could also become future pruning or management blocks as well. The plan to reach a 40% canopy goal is aggressive and far into the future given that it is effectively a doubling of the current cover. The 40% goal cannot be reached in the 20-years, however plans are generally considered on this time frame (Kenney et al., 2011).

The blocks chosen roughly consider the layout of the internal community blocks and the land uses in their separation. For example, we wanted to separate the large commercial or high-density residential blocks and open spaces because they should be managed and addressed separately from the other low-density residential uses or small commercial buildings, which do not have a lot of land to work with for planting. These larger blocks will likely require more strategic planning with the landowners and will have more stakeholders to consider. Each of these sites will likely have their own specific limitations, in comparison to the low-rise residential lots.

Figure 1 below is a draft block plan, which can be amended following further stakeholder engagement but it shows some of the planning that will be necessary to consider for planting into the future.

Figure 1: A draft 20-year planting plan. The colour coded blocks illustrate the blocks that can be addressed together for a given year for planting and management purposes. There is no particular block that should be addressed, necessarily, before the other. Like uses and similar lot layouts were considered when forming the blocks.

Vision

The vision guiding this paper is the development of a neighbourhood scale plan for Harbord Village, which will increase tree canopy cover dramatically. The vision is supplemented by adding that it should also be applicable to other like-communities (i.e. downtown, Victorian neighbourhoods especially), be scalable, be adaptable and sustainable, while considering the threat of climate change and the urban heat island. A future plan that will allow other communities to see themselves in this pilot project can help put pressure on the city for action via resident interest and action.

Objectives

We will meet our vision through the following objectives, and these objectives can be divided into short term and long term:

Short Term Objectives

1) Assess the urban forest and calculate canopy cover as well as finding potential problems for HV.
2) Consider canopy cover at all vertical layers, as the lower canopy is not normally included in the calculation of canopy cover; however the lower canopy is also part of the urban forest.
3) Find potential areas to increase canopy cover, including through replacing impermeable surfaces/hardscape, thus helping expand the urban forest.
4) To partner with the City of Toronto to develop and create a plan that will be endorsed by city council.
5) Promote public engagement by raising public awareness of forest efficiency and ecosystem services.

Long Term Objectives

1) Maintain urban forest health by making a long-term tree maintenance schedule, pest management plan and public engagement plan.
2) Plan for a changing climate by ensuring the urban forest will be resilient and adaptable, since this is also important for local biodiversity because local biodiversity depends on native urban forest.

Challenges

There are several problems that might make it difficult for HV to achieve its goal of a resilient urban forest with 40% canopy cover and healthy, long-lived trees.

Tree Removal

There are many factors leading to the possibility that many trees in HV will be removed in the future. This includes some trees that are in senescence , or that pose threats to residents, and some that are in conflict with infrastructure. These trees may be removed in order to ensure the safety of residents. In addition, there are ash trees in HV, and with the invasive emerald ash borer, these ash trees are also recommended to be removed. A large number of trees are removed manually, which will cause HV to lose a large part of the canopy cover.

Health of Trees

The overall condition of the trees in HV is acceptable. 61% of the trees are in excellent condition, while another 18% are reported to be in good condition. However, some are still in poor and very poor health condition, with 5% and 8% respectively (Keller, 2007). Although this data is from 2007, given the direction of tree health in HV, the overall health of trees is likely declining as there would be nothing to suggest an improvement. From this we may also conclude that HV could suffer the loss of these additional trees in the near future, resulting in a large canopy cover loss that will have to be prepared for and offset in future planting plans.

Uneven Age Distribution

The age structure of the trees within the HV is unbalanced, with the majority of trees being older and mature, while the younger trees account for a relatively small proportion (Thorpe, 2018). This will also bring similar problems as mentioned above. With the loss of many old trees, there will be a shortage of young trees to fill the gaps, resulting in HV losing a large part of its canopy cover in the future.

Unbalanced number of individuals between species

Another problem in HV is that the representation between different species is unbalanced. A small amount of species make up the majority of the population. For example, the second most abundant species is the Norway maple (*Acer platanoides*), which is a non-native invasive species from Europe (Thorpe, 2018). Furthermore, 58% of the total urban forest in HV consists of non-native tree species (Thorpe, 2018), which contributes to the canopy cover goal and therefore potentially impacts the resiliency of the canopy (Siemann & Rogers, 2001). However, non-native species are generally more vigorous to new habitats, thus depriving native species of their habitat (Siemann & Rogers, 2001). The loss of native species could also alter and eliminate wildlife habitat (Moser et al., 2009) and effect local biodiversity.

Development

There is an ongoing battle between tree roots and pavement in HV. Trees planted on hard surfaces are often affected by soil compaction, soil volume limitations, a lack of oxygen in the soil, and can have limited nutrient availability, which can cause root damage thus adversely affecting the health of the trees (Mullaney et al., 2015). As HV is located in the downtown core, they are facing heavy development pressures. The majority of surfaces are impervious and 25% of the trees are surrounded with over 50% hard surface, while 12% of the trees are surrounded by over 90% hard surfaces (Thorpe, 2018). Addressing the problem of impervious surfaces will not only benefit the health of a large part of the trees but also create more space to improve the canopy cover. In addition, the neighborhood lacks a sizable park, which means it relies more on street trees to provide green spaces for the benefit of residents and visitors.

Lack of public awareness

Given the hard surface problem HV is facing, backyard trees will make up a large portion of the potential planting space. According to the 2018 tree inventory report, 33% of the trees in HV are located in the backyards, while more than half (51%) of the dead and removed trees were located in the backyards (Thorpe, 2018). Since the backyards are privately owned, this will be one of the major challenges to HV given the hesitation to plant trees on private property. Public education is the best way to raise their awareness of the benefits of trees. Therefore, persuading residents to plant trees in their backyards will be an important aspect of achieving the 40% canopy cover goal.

Preparing for the Future

In the coming decades, forest ecosystems as well as urban forests will face a series of challenges including climate change and pests (Cavers & Cottrell, 2014).There may be many researchers who try to use models to predict the future, but many times the predictions prove to be unreliable (Williams & Jackson, 2007; Meyer, 2017). Therefore, we have to let our urban forests be resilient and adaptable to those future challenges and one of the most important things is to preserve the diversity of tree species (Cavers & Cottrell, 2014). However, the urban forest in the HV is ill-prepared for the future since the species richness of trees in the neighbourhood is too poor, future challenges will depend on a small number of tree species, and if these species fail to adapt to the future climate or suffer from pest, that could cause a large loss of forest areas (Cavers & Cottrell, 2014). The invasive emerald ash borer is a very good example to show us how bad pests can affect urban forests if we are not prepared. So increasing the diversity of tree species in urban forests is an important step in meeting future challenges.In addition, HV also faces many other problems mentioned above, so this is why an urban forest management plan is so urgently needed.

Pilot Project Approach

This approach was imagined up by HVRA as a way to create immediate action and entice city action. Pilot projects have worked in the past as a way to build interest in a cause and as a means to test and show that a particular problem could be solved quickly in novel ways. The City of New York, in particular, was successful with this approach surrounding their transportation and land use related projects (Ryerson CBI, 2016). They showed that quick, easy wins could be had without having to spend months of preparation and without getting overly "political" and/or bureaucratic with the process. They reclaimed streets for people (Ryerson, CBI, 2016). There is also a successful concept in the Netherlands, known as "woonerf", which could be embraced to rethink the ways space is allocated in HV (Jaffe, 2015). While the comparisons are not exactly analogous, the conceptual approach is the same; take action as soon as possible and test some of the possible approaches that we think can be successful. And generally, with trees, it is quite apparent: planting trees where you have the space has many benefits (Resilience Strategy, 2018). Unfortunately, the pilot project we want to test in HV is expensive and while the literature provides the support for trees for a variety of reasons , we also know that we won't be able to see the results of this pilot for some time as trees go through their establishment period onto developing a sizeable canopy into the future (i.e. will the increased plantings take; who will be responsible for the new plantings and or will residents and landowners agree to it; will increased stewardship be reliable and/or committed to to allow tree success etc.).

The policy review above showed the routes that could be taken for partnerships to create the pilot project approach. Partnerships with private entities should also be considered. Trees Canada, for example, has had multiple events and successful private partnerships that involved tree planting (Trees Canada, 2019). These have been in public open settings where their brand could be advertised, however similar marketing could, perhaps, be considered given that this is in a very visible downtown neighbourhood.

Additionally, the work to date by HVRA, including the supporting documents they managed to build with partners like the University of Toronto and other institutions, is extremely valuable. For example there are two tree inventories that provided an opportunity for monitoring analysis. This is a big selling point when approaching the city for this pilot project partnership. There are very few, if any, neighbourhoods that have two, full inventories, in Toronto, and can be sold as a huge cost savings for the city. It also allows the pilot project to get up and running without having to spend months inventorying for a baseline.

Findings

We conducted a plantable space analysis that considered planting throughout the neighbourhood based on satellite imagery. This was done in order to consider building footprints for the larger land holdings, while also considered the existing canopy cover using the provided GIS layer. The results of the exercise are shown in Figure 2; we found plantable space for 588 backyard trees and 384 trees along the frontyards, some of the larger commercial spaces and on portions of the larger residential and institutional uses.

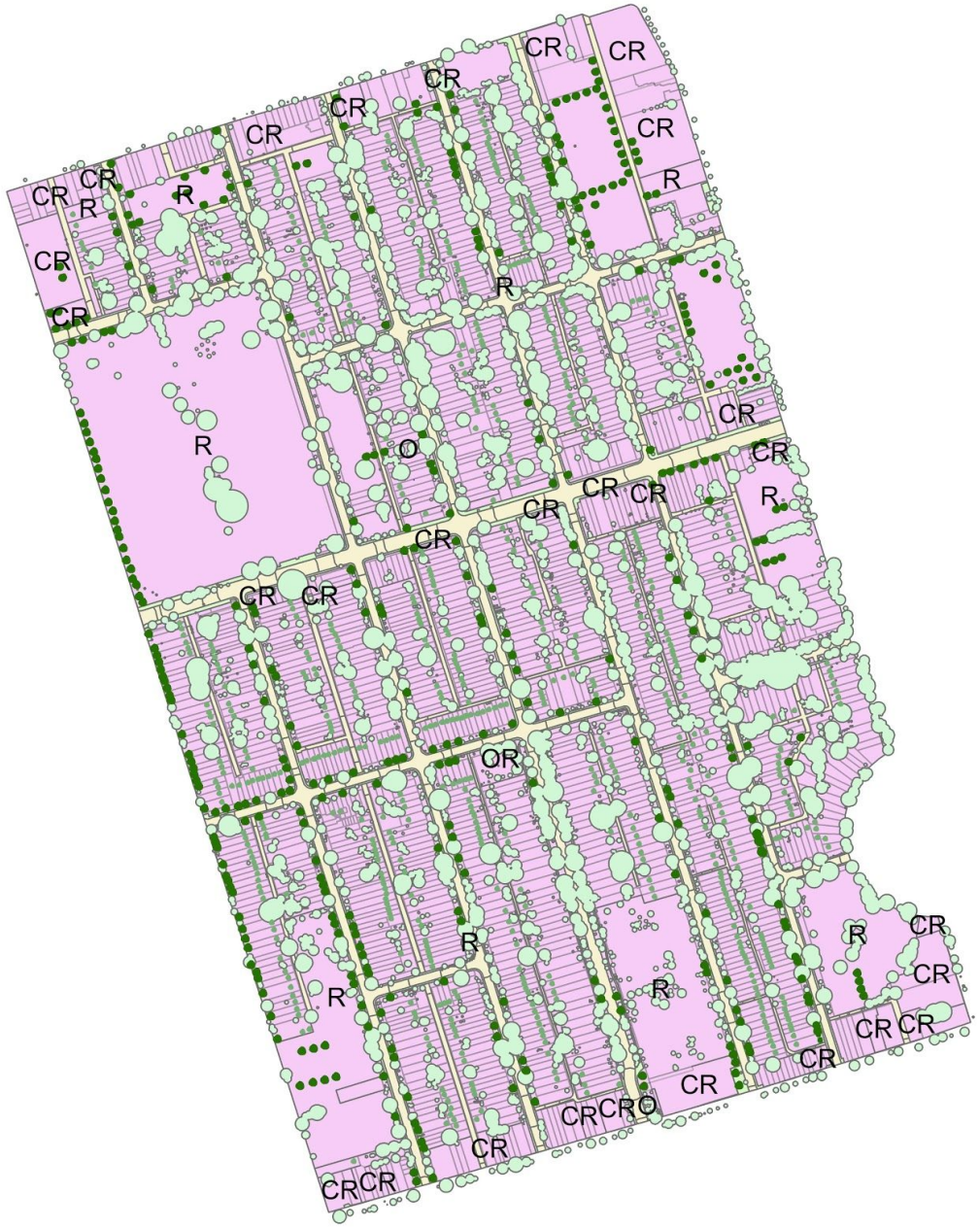

Figure 2: The results of the plantable space exercise. The connected lighter green polygons represent the existing canopy and the two other shades of green represent backyard trees (placed at the end of the residential lots) and the darkest green shade represents the planting of trees in areas other than backyards.

The area of HV is ~0.6 km^2 and HV sits at a canopy cover percentage of 21.9% (~0.13 km^2). To determine how many tree plantings will be required to reach a canopy cover of 40%, we assume an average tree canopy area of 22 m^2, which was calculated using the average canopy cover of deciduous trees from the 2018 tree inventory. In this case, an estimated 4,800 trees will need to be planted (or greater than 0.1 km^2 of coverage) in order to reach this goal. It is important to note that this number does not consider mortality rates, which typically average at around 1% in urban areas (Roman et al., 2016), but could be even higher and more variable for younger trees during establishment (Richards, 1983; McPherson et al., 2008) although variable. Properly considering these rates by species planted will increase the number of trees needed to reach the canopy cover goal.

To fast track establishment, we are proposing larger stock trees be planted however this will be limited by the budget dedicated to this project. This will have to be explored further. Given that hundreds of trees will be required to be planted each year across a 20-year planting plan, we are not certain how financially realistic larger stock trees can be at this point in time. The 22 m^2 average crown area proposed will take at least 20+ years to achieve, of course, depending on the species of the trees in question. Additionally, mortality rates will need to be taken into consideration, A cost benefit analysis should be considered regarding the cost of tree planting and mortality and the commitment to the 40% canopy cover timeline, which the city has set for the year 2057. Across the 20-year plan, which brings us to the year 2040, we are proposing 150 trees be planted each year. If this were to continue to the city's target year of 2057, that equates to over 5,500 trees.

Given that the larger land holdings in HV could potentially be more creative in their approach to tree planting because of space - but also because they could have different land ownership structure that is likely different from the ownership structure of a typical residential low-rise lot - we decided to be conservative on the estimate of the trees in our analysis because we felt it would require more stakeholder engagement and a firmer understanding of the owners long-term visions for the property.

Another limitations in the front and backyard tree analysis along the low-density residential lots included the fact that the site context was not closely considered (i.e. whether there was appropriate space given the impervious surfaces present or the exact locations of structures like sheds and garages). Some backyards are more limited for space than others and it could be that the tree proposed may not reach an average canopy cover of 22 m^2. The backyards could include paved areas and ancillary buildings that encroach into most of the backyard space. Therefore, the reporting of the backyards was reported as a separate number. The backyards, as reported in the literature because of culture and preferences (Roman et al., 2018) and the increased mortality rates in backyard trees will not be an easy win. However, along the front yards, the city should exercise their right to plant.

In addition to the obvious opportunity of addressing planting opportunities with the large owners is the amount of land dedicated to parking throughout the neighbourhood. The parking comes in many forms: on-street, laneways, large parking lots (Green P and private like those dedicated to institutional uses and large commercial establishments) and a scattering of smaller lots with multiple car stalls. While a downtown core community, there is still very much an enabled car culture here by providing so many car parking opportunities. This goes a bit beyond the scope of this report, however, the space and surfaces dedicated to parking are in absolute conflict of tree planting.

Pilot Project and Planting Analysis Recommendations

Before providing some recommendations based on the tree inventory, we would like to provide some practical recommendations strictly considering some things that could be tested and considered in the pilot project, which we came to from our pilot project and planting analysis and HVRA discussions[1].

We feel the biggest win will come from addressing plantings with the large property holders. This should include stakeholder meetings to have these residents and owners comfortable with the transformation of heavy tree planting on their property, at their expense. We can share the literature and energy savings reported and entice them with incentives the pilot project will provide, as we will discuss below. However, the major selling point, is the recommendations that will include the development of an arborist and landscape plan that they will get assistance in preparing taking into consideration their future plans for development. We foresee that many will be hesitant to plant because it could hinder future development. Hopefully, the appropriate planning could ease their concerns..

Secondly, the city will have to consider limiting and revising parking requirements and spaces, which could also include the purchasing of large parking areas, like the Green P lot between Lippincott Street and Borden Street, just south of Bloor Street. In a similar vein, a land trust should be explored, like is happening in Parkdale to help save low-cost rental housing from development (PNLT, 2019). We should be treating the tree planting space as a similar issue and threat. We feel like this problem cannot be solved or the canopy goal cannot be reached, without seriously beginning to address these large parking areas.

Additionally, incentives should be tested. A major concern for trees in this neighbourhood are development pressures. Anecdotally, we have also been told that there have been some inconsistencies in the application and fulfillment of Committee of Adjustment (Cofa) conditions[2]. Incentives should be developed that value the protection of trees by fast tracking projects going through review at the city, including CofA applications, which go above and beyond to preserve trees and green space (including projects that implement higher pervious surfaces than required for future vegetation planting). We also briefly explored the

[1] We had seven meetings across the semester from September to November, 2019.
[2] The development of these CofA application and their effect on the canopy cover should be explored further. A recent project in Long Branch was recently completed, which showed how impactful these applications were (UofT capstone - DeSantis, 2019).

value of providing tax incentives for homeowners that meet a criteria (one that should be developed in the next phase) regarding the canopy percentage on their property. However, given the nature of development in the area, we felt this may not be the way to go to target the right people - the people developing likely care more about the timing of their project than saving a few hundred dollars on taxes after having allocated hundreds of thousands on renovations.

Another area of exploration we recommend is to consider the canopy cover at all vertical levels. We had originally considered providing an incentive to residents to remove small shrubs and trees in place for large trees, however this may send the wrong message and then discount some of the benefits that shrubs and smaller trees have, especially on the UHI (Millward et al., 2014). We don't want to alienate any residents from participating in whatever way possible. More vegetation is better than less although we do recognize their are more valuable species than others. While smaller trees and shrubs may not contribute a whole lot to the canopy cover goal, we know the psychological well being greening has on us. Stubbings and colleagues (2019), consider the street-level imagery of greening, which considers a different spatial distribution of greening. The observations was that all levels of vertical canopy could be measured. It can be thought of as a canopy cover percentage observed at the street level. However, while this idea can be promoted, we wouldn't want the message to be that this should replace an opportunity for future large shade tree plantings where there is an appropriate opportunity for them to be planted. The benefits of large, native trees with high leaf area cannot be overstated, when planted in the appropriate area (Toronto, 2016).

Finally, the laneways, corner flanks, street bump outs and potential medians should all be considered as sources of potential planting space. What is very encouraging is that the corner flanks are already beginning to be addressed by the city. For example, at Robert Street and Bloor Street, on the west side of the Metro grocery building, a parklet has been built. The repurposing of these previously lost spaces to impervious surfaces are being reclaimed. The only criticism may be the ground cover (Phelan et al., 2015) but given the high foot traffic of the area, the surface selected might be the best available option. There are a few street bump outs located within the area already, which take up on street parking. The residents adjacent to them will likely be in opposition to them, therefore consideration should be made to include the bump outs where the residents have laneway access to a garage for parking. The large tree pits that can be created from these bump outs provide a co-benefit of greening for the purposes of also controlling traffic versus speed humps, which do not provide any other benefits. Potential green medians, down the larger streets, like Brunswick Avenue, were also proposed but this would have to go hand in hand with our other proposal of tackling parking. Without reducing on-street parking, some of these solutions will be difficult to resolve. This shows us, again, the priority of addressing the parking demands of HV.

The laneways are an area of the neighbourhood we wanted to originally provide a series of recommendations for, however to tackle the laneway solution was well beyond the scope of this project. There are safety concerns, which we were not familiar with that would have to be addressed including things like the city's responsibility for damaged related claims, emergency service access among others. We did, however, show opportunity for parts of Sussex Mews in the north end of HV that could be planted and the few opportunities where parts of the laneways opened up with large corners that allowed planting. There are also large parking lots in parts of the laneways. A plan for these areas should be considered in a more holistic and fulsome way. While these are private lands (and potentially grandfathered to avoid certain new by-laws), they may not be meeting soft-landscaping requirements or could potentially exist simply to conform to older, out of touch, parking requirements[3].

Recommended Actions

Tree Planting

We suggest that HV takes advantage of existing programs such as LEAF and Tree for Me to promote tree planting in residential areas. LEAF, through its backyard tree planting program, provides native shrubs and trees to homeowners at subsidised costs. LEAF's backyard tree planting program has been developed in the last 20 years to provide not only trees, but also planting care advice to homeowners, and tracking the success of plantings. In addition, Tree for Me is a program funded by the City of Toronto and the Toronto Parks and Trees Foundation which provides trees at no cost to residents. Trees are grown from seeds which come from existing trees within the city. Residents are "matched" to a tree species based on the conditions of the planting site such as drainage and light exposure. Tree planting and care workshops are also provided to promote tree health. We recommend HV to work in partnership with LEAF to expand tree establishment on private residential lands.

A direct rebate program for tree planting on residential lots would help remove potential financial barriers and, together with an education and outreach program, would provide an incentive to residential property owners to consider tree planting on their own property. Priority should be given to the applications for trees intended to replace removed ash trees.

[3] This is outside the scope of this report, but along with the CofA reporting, a similar parking study should be conducted for the neighbourhood to calculate the demand and the space dedicated to parking. Along with this, a stormwater management assessment could be made to show how potentially negative this could be on the neighbourhood while providing a preliminary assessment for landowners on the benefits that trees could have on preventing things like flooding.

With regards to tree planting on industrial and commercial land, we suggest that the HVRA promote LEAF's Multi-Unit and Business Plantings Program. This program offers native trees and shrubs to businesses across Toronto at a subsidized cost along with technical support. Adopt a Street Tree is another program being operated by LEAF in partnership with the City of Toronto to support tree care activities on commercial streets. HVRA needs to incorporate a partnership program with LEAF and encourage landowners and property managers to convert 'industrial previous' or `industrial impervious' lands to tree cover as well as encouraging plantings in parking lots.

Guidelines on tree species being planted:

- Climate change adaptation will require that we should consider planting a diversity of tree and shrub species that are native
- can adapt to shifting climatic ranges
- can tolerate urban stresses, requires least care and maintenance.
- The general best practice 'rule' for healthy diversity is the '5-10-20' rule which reflects no more than 5% of one species, 10% of one genus, and 20% of one family.
- Where there is no room for trees, planting shrubs should be considered.

Tree Maintenance and Monitoring

Growth and survival of young trees can be significantly enhanced by intensive care of young trees and by keeping a track on the success of new trees plantings can reduce long term maintenance costs and minimize vulnerability to storm damage.

Watering

- Encourage homeowners to take stewardship of street trees
- Find better sources to water public trees such as drainage, waterpark wastewater discharge strategies
- Establishment of watering contract for the first few years of young tree plantation

Pruning

- A five-year cycle of pruning the trees can be established by dividing the HV into 5 blocks. five-year pruning cycle has been shown to lead to better tree condition, while minimizing costs

Monitoring

- 5-year tree assessment cycles to ensure fewer conflicts with infrastructure
- Young tree monitoring using TRCA's young tree and shrub monitoring and maintenance program.
- Focus on maintaining aging trees rather than removal.
- Leaving some dead trees standing could be considered to improve the biodiversity in HV. The trees that are left standing should be inspected by the certified arborist every year, even if they are not in the area of the pruning cycle, to make sure they are not a liability and a risk.

Inventory

- Inventory should be updated every year with the new trees being planted and also ones which are dead and fallen should be deleted from inventory
- It is essential to include every backyard tree in inventory to have a fair picture of overall canopy in HV, which is the limitation of inventory produced in 2018.
- Residents should be educated and informed in advance using flyers and media.

Raising Public Awareness

Resources dedicated to outreach and education should be equivalent to resources dedicated to actual tree planting and maintenance of young trees.

- Education related to the benefits of trees should be provided through the websites and social media feeds.
- LEAF is conducting guided tree tours in Toronto where they highlight trees of interest to a neighbourhood and incorporate history, culture and personal stories. HVRA should engage with LEAF for such guided tours in HV.
- To explore and identify opportunities for outreach in different languages through local religious groups and association networks.
- Continue to host community events through HVRA and raise the awareness regarding pests and tree health care

Conclusions and Next Steps

Harbord Village (HV) is a unique neighbourhood rich in history and community, with residents and a neighbourhood association that care about their green spaces Its location, history, community, and the existing tree inventories conducted make this neighbourhood an ideal place for a pilot project to grow the urban forest canopy. We believe that enough support for this pilot project exists from the municipality by way of policy which is already in place. The neighbourhood has several issues to face in terms of growing its green spaces. Heavy development pressures, tree mortality and removal, uneven age and species distribution, and lack of public awareness will need to be addressed in order to improve the sustainability and health of the urban forest. HV currently sits at a canopy cover of almost 22% and thus, reaching a canopy cover of 40% seems unlikely in the near future, however, it is important to set ambitious goals if ambitious outcomes are to be reached.

We recommend that HVRA partner with the City of Toronto, non-governmental organizations, residents, and developers to expand the neighbourhood's urban forest. Tree plantings will be required on residential, municipal, and commercial land, with a focus on planting diverse species that are not only well-adapted to an urban environment, but that can also be resilient in the face of climate change and other impending threats. We also recommend that emphasis be placed on tree maintenance and monitoring. Maintenance will be important to reduce tree mortality and removal due to conflicts with infrastructure and residents. Monitoring will be necessary to assess the health of the forest and the successes of the project. Finally, involving residents and educating them about the benefits of the urban forest will be essential. The HVRA has expressed their concern at many residents' choices to pave their properties rather than plant trees or shrubs. We recommend outreach programs to share the benefits of green spaces with the community. These recommended actions should help HV to expand and strengthen its urban forest, with the goal of applying successful strategies to other neighbourhoods in the City of Toronto and grow the city's urban forest as a whole.

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Appendices

Appendix 1: A list of the City of Toronto's existing and relevant policies which were reviewed to determine whether appropriate support was in place for Harbord Village's urban forest pilot project.

Plan or Policy	**Category**	**Relevance**
Growth Plan	Provincial plan; land use	Recognizes natural resources as essential for sustainability of all communities. Discusses the importance of addressing climate change and conservation issues.
Provincial Policy Statement	Provincial plan; land use	Promotes sustainable land use patterns with a focus on long-term economic, ecological, and social goals. Provides support for well-managed land use that leads to well-being of communities.
Toronto's Strategic Plan	Overall strategy	Recognizes the issues of climate change, infrastructure deficits, social disparity, and economic uncertainty. Recognizes the importance of green spaces in bringing communities together.
Official Plan	Planning	Places emphasis on protecting Toronto's natural environment and urban forest while recognizing the pressure of development on the environment. Recognizes green spaces as a way to improve quality of life and empower neighbourhoods.
Zoning By-law	Planning	
Climate Resiliency Framework	Overall resiliency plan	Discusses the importance of the urban forest and street trees for mitigating climate change effects and improving human health and well-being. Recognizes the importance of green infrastructure and roadway greening.
Strategic Urban Forest Management Plan	Urban forestry	Discusses threats to the urban forest and challenges to grow the

		urban forest canopy. Identifies the need for suitable growing environments for trees, increasing tree canopy and diversity, and regulating injury and destruction to trees.
Tree Planting Strategy	Urban forestry	Recognizes the importance of diverse and resilient urban forest, with a goal of 30-40% canopy cover.
Every Tree Counts	Urban forestry	Recognizes the importance of a well-managed urban forest and the services one provides. Places an emphasis on large, healthy, long-lived trees. Recognizes the threats of climate change and invasive species.
Complete Streets Gidelines	Green infrastructure	Highlights the importance of the urban forest canopy. States that streets should improve the city's environmental sustainability. Discusses ways in which streets and laneways can incorporate green components.
Wet Weather Flow Master Plan	Technical report	Discusses the benefits of green infrastructure and street trees and shrubs in water absorption and retention and increased evapotranspiration. Highlights the need for more permeable surfaces.
Green Street Technical Guidelines	Technical report/urban forestry	Discusses the importance of a long-lived urban forest and the benefits provided by one. Discusses the importance of street trees and community partnerships to increase urban forest canopy.