

Neighbour Woods[©]
Summary analysis of the tree inventory

**Bonnerworth neighbourhood
Peterborough, Ontario**

by

D. Puric-Mladenovic & W.A.Kenney

Report prepared for
Peterborough Green-Up, Our Urban Forest Program

January, 2009

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Peterborough, Ontario

2008 Tree Inventory

- Tree inventory analysis and report prepared by D. Puric-Mladenovic & W.A.Kenney.
- Report prepared for Peterborough Green-Up, Our Urban Forest Program
- Field data collection undertaken by Peterborough Green-Up and volunteers from Peterborough



A Community Action Project



In 2007, a partnership was forged between Peterborough Green-Up and the City of Peterborough to recognize the importance of a healthy urban forest and to protect and enhance our community's trees for the benefit of current and future generations.

With the support of the Ontario Trillium Foundation, a three year project was designed to examine the current state of our urban forest, explore opportunities to enhance it, and to involve local residents in a variety of education and action initiatives.

Early in the process, it became evident that conducting neighbourhood tree inventories would be an excellent way to involve community volunteers while also generating invaluable information for future planning. The excellent "Neighbourwoods" program was made available by its founders, Dr. Andrew Kenney and Danijela Puric-Mladenovic, who also provided training for Peterborough Green-Up staff and volunteers. This report is the result of the first summer of community participation in "Neighbourwoods" providing direction for future tree establishment and management initiatives on public and private land in the City of Peterborough.

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**THE ONTARIO
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We are grateful for the support and participation of many local residents and organizations

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Homeowners

Our thanks to the homeowners in the study area for their interest and cooperation.

Inventory Area

Bonnerworth Community

The Bonnerworth Community was inventoried by Peterborough Green-Up staff and community volunteers from June through August of 2008. It is a 12.52 hectare piece of the larger “Bonnerworth” neighbourhood as designated by the City of Peterborough.

Bonnerworth is one of the older neighbourhoods in Peterborough, dominated by a mature urban forest. The area includes Queen Mary Elementary School and is otherwise entirely residential. This inventory includes public and privately owned trees on 118 properties within the study area, as well as trees in the Queen Mary schoolyard. A total of 829 trees were inventoried for this report.

Bonnerworth will be referred to as “the community” in the rest of the report.



NeighbourWoods©:
Summary analysis of the tree inventory

**Bonnerworth neighbourhood
Peterborough, Ontario**

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Appendix A: Condition of All Inventoried Trees

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Composition of Community Forest

Trees have been a component of human settlement for many centuries, either in forests, in the countryside, or in cities and towns. Trees were planted around homes and churches, in cemeteries, school yards, parks, boulevards and many other places, thereby placing an accent on their aesthetic function. Because of this traditional context, tree planting and maintenance were subordinated to a single-tree level, and the connections among them and their collective importance was not thought to be a consideration. More recently, the importance of trees in settled landscapes has increased because of climate change, increasing pollution levels, and an expansion of build up areas, all resulting in degradation or continuous loss of forests and trees within and around urban areas. These dramatic changes in the environment have significantly emphasized the ecological value of trees in urban areas. It has been only in the last few decades that trees in towns have been thought of as a forest that improves our environment and provides us with many benefits.

Urban forests, as a product of nature and human activity, can have a very complex structure. With a more detailed look at urban forests, you can see many differences in forest cover alone. The structure and the quality of urban forests differ among parks, ravines, industrial areas, downtowns, streets, and residential areas. Trees from each of these areas have an impact on the urban forest as an entity, and all of them collectively are the urban forest. The structure of the urban forest has been analyzed from different angles. The ownership of trees in a community is summarized, as well as species and genera distribution, diameter class distribution, distribution of native trees, and distribution of conifers versus deciduous trees. This approach is needed to make informed management decisions and to apply proper maintenance techniques. For instance, species distribution does not necessarily reflect real canopy cover in a community. Some species could be numerous, but small in size and thereby not maximizing their contribution to the urban forest. Meanwhile, another species could be less common, but because of its large size, dominate the canopy. By knowing the species distribution it is possible to increase the number of native species versus non-native in future plantings, and to put more emphasis on species diversity. These aspects of composition and structure of the community forest are presented in the following chapter and discussed in the summary of this report.

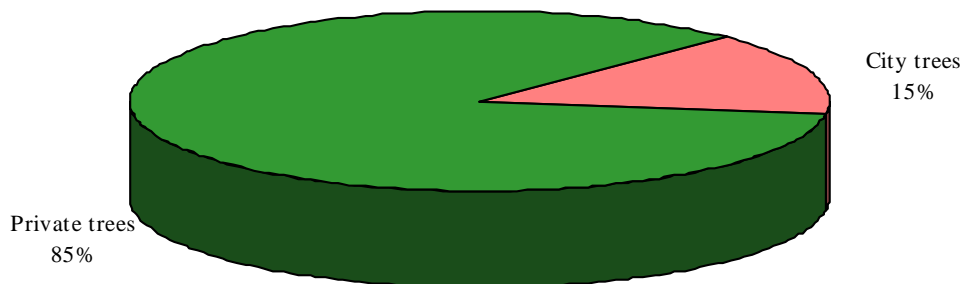
Residential trees have a meaningful role in towns as a substantial part of the entire urban forest. One third (30%), is composed of trees growing in residential areas. Similarly, the highest percentage of canopy cover is generally found on residential land, vacant and parkland (Nowak 1994). By understanding urban forest composition throughout an entire community, it is possible to identify opportunities to enhance the urban forest as well as address its limitations. Good planning and management practice begins with a comprehensive understanding of the urban forest composition.. Good planning and management can help maximize environmental, economic and social benefits by improving the quality of the community forest.



Distribution of Trees on Public and Private Land

The ownership of trees is an important aspect to consider in good urban forest management. Typically, about one third of the trees in the urban forest may be found in parks and on streets. These are publicly owned, and their care is the responsibility of the City. The remaining two-thirds of the trees in a city are found on private property, where species choice, tree establishment, and tree maintenance are the responsibility of the owner. The proportion of privately and publicly owned trees in the community is shown in Figure 1.

Figure - 1. Proportion of municipally owned trees vs. privately owned trees





Distribution of Diameter Classes in the Community

The size of a tree will determine the extent of many of the benefits that the tree provides to the community. Larger trees have a greater effect on micro-climate and hydrology, sequester more carbon dioxide, trap more dust and pollutants, and provide more wildlife habitat. The appraised value of a tree, increases with the square of the radius of the tree's cross-section. For many species, size will also provide an estimate of the relative age of an individual.

The distribution of all trees in the community by diameter is presented in Figure -2. For clarity, Figure -3. shows the distribution of the largest diameter classes.

Figure - 2. Number of trees in each of six diameter classes

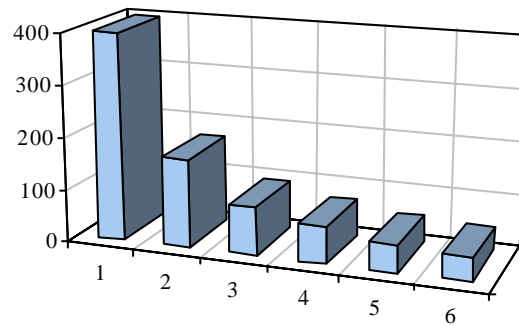
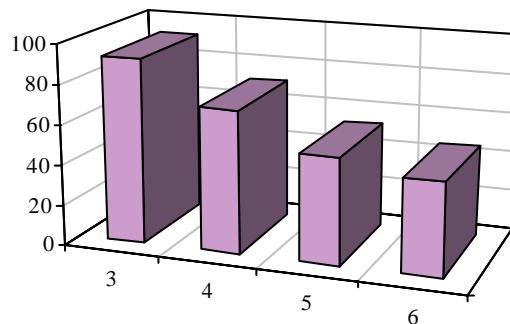


Figure -3. Number of trees in diameter classes greater than 30 cm



Diameter classes:

1- <15.5cm

2- 15.6-30.5cm

3- 30.6-45.5cm

4- 45.6-60.5cm

5- 60.6-76.5cm

6- >76.6cm

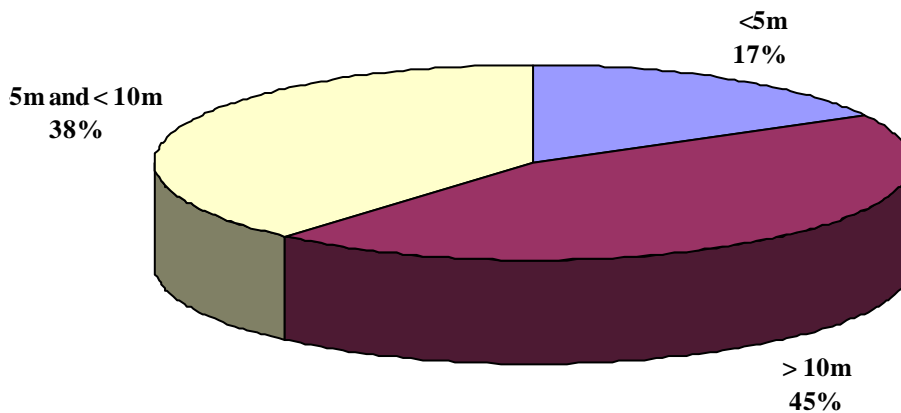
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Distribution of Trees by Height Classes in the Community

There is a trend towards planting smaller trees in urban environments, as they are better able to cope with aboveground restrictions, such as power lines, signs, and buildings. However, these trees don't provide the same positive effects on the environment, as do larger trees. Cities need larger trees that can form a closed canopy. Larger trees abundant enough to cover about half the city's surface can: reduce the speed of winter winds, cool pavement and shade buildings in the summer, attenuate storm water, improve air quality by intercepting airborne pollutants, and generally improve the urban landscape, etc. (Moll 1989). The proportion of all trees in each height class, as measure of urban forest structure, is shown in Figure 4.

Figure - 4. Proportion of trees by height classes



Height Classes:
Height class 1 - <5m
Height class 2- 5-10m
Height class 3- >10m

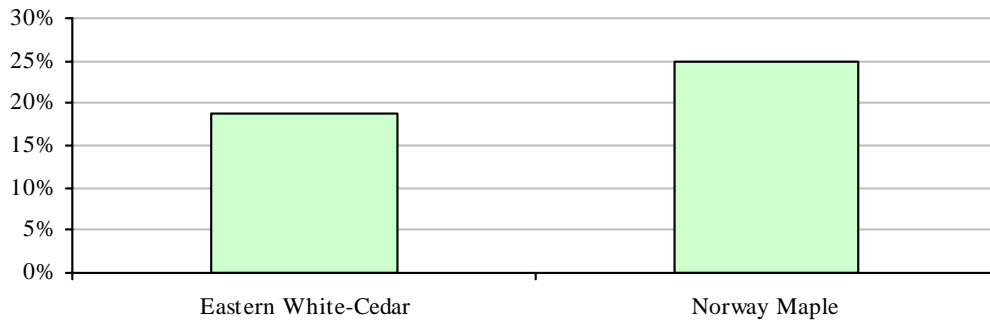
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Distribution of Species in the Community

In order to increase biodiversity in the urban forest, it has been suggested that no more than 5% of the trees in a community should be of the same species (Moll 1989). Biodiversity ensures against the rapid and devastating loss of trees due to pest or disease epidemics. Consider, for example, the American Elm that used to be the main tree species component in many eastern North American cities. The spread of Dutch Elm Disease killed most elms in a relatively short time, leaving behind severely depleted urban forests.

Figure -5. Contribution of species represented with more than 5% of the total trees in the community



The species which represent 5% and more of the population in the community are shown in Figure - 5.

The number of trees in all species is shown in Table - 1. The distribution of species and diameter classes is shown in Figure - 6.

Table -1. Number of trees by species.

Common name	Number of Trees	Proportion of Total Number of Community Trees
<i>Norway Maple</i>	206	24.85%
<i>Eastern White-Cedar</i>	157	18.94%
<i>Black Walnut</i>	39	4.70%
<i>Alder Buckthorn</i>	31	3.74%

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Table -1. Number of trees by species.

Common name	Number of Trees	Proportion of Total Number of Community Trees
<i>Sugar Maple</i>	31	3.74%
<i>White Ash</i>	31	3.74%
<i>Colorado Spruce</i>	25	3.02%
<i>Silver Maple</i>	23	2.77%
<i>White Spruce</i>	23	2.77%
<i>Norway Spruce</i>	22	2.65%
<i>Crabapple(s)</i>	20	2.41%
<i>Red/Green Ash</i>	20	2.41%
<i>French Lilac</i>	17	2.05%
<i>Basswood</i>	14	1.69%
<i>Paper Birch</i>	14	1.69%
<i>Oriental Cedar</i>	11	1.33%
<i>Austrian Pine</i>	8	0.97%
<i>Balsam Fir</i>	8	0.97%
<i>Juniperus sp.</i>	8	0.97%
<i>White Pine</i>	8	0.97%
<i>American Elm</i>	7	0.84%
<i>Oriental Cherry</i>	7	0.84%
<i>Black Locust</i>	6	0.72%
<i>European Mountin Ash</i>	6	0.72%
<i>Japanese Crabapple(s)</i>	6	0.72%
<i>Manitoba Maple</i>	5	0.60%
<i>Peach</i>	5	0.60%
<i>Scot's Pine</i>	5	0.60%
<i>Ash sp.</i>	4	0.48%
<i>Honey Locust</i>	4	0.48%
<i>Little-Leaf Linden</i>	4	0.48%
<i>White Mulberry</i>	4	0.48%
<i>American Mountainash</i>	3	0.36%

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Table -1. Number of trees by species.

Common name	Number of Trees	Proportion of Total Number of Community Trees
<i>European Yew</i>	3	0.36%
<i>Siberian Elm</i>	3	0.36%
<i>Bigleaf Linden</i>	2	0.24%
<i>Black Ash</i>	2	0.24%
<i>Black Maple</i>	2	0.24%
<i>Common Yew</i>	2	0.24%
<i>Douglas Fir</i>	2	0.24%
<i>Ironwood</i>	2	0.24%
<i>Magnolia sp.</i>	2	0.24%
<i>Pignut Hickory</i>	2	0.24%
<i>Russian Olive</i>	2	0.24%
<i>Sour Cherry</i>	2	0.24%
<i>Sumac</i>	2	0.24%
<i>Tamarack</i>	2	0.24%
<i>Yew sp.</i>	2	0.24%
<i>Birch sp.</i>	1	0.12%
<i>Black Mulberry</i>	1	0.12%
<i>Canada Plum</i>	1	0.12%
<i>Chinese Juniper</i>	1	0.12%
<i>Common Pear</i>	1	0.12%
<i>European Larch</i>	1	0.12%
<i>Golden Weeping Willow</i>	1	0.12%
<i>Japanese Maple</i>	1	0.12%
<i>Kentucky Coffetree</i>	1	0.12%
<i>Mugo Pine</i>	1	0.12%
<i>Red Cedar</i>	1	0.12%
<i>Red Oak</i>	1	0.12%
<i>Red Pine</i>	1	0.12%
<i>Rock Elm</i>	1	0.12%

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Table -1. Number of trees by species.

Common name	Number of Trees	Proportion of Total Number of Community Trees
<i>Serviceberry</i>	1	0.12%
Total Number of Trees:	829	



Distribution of Species by Diameter Classes (only those >3% of the total tree population are shown)

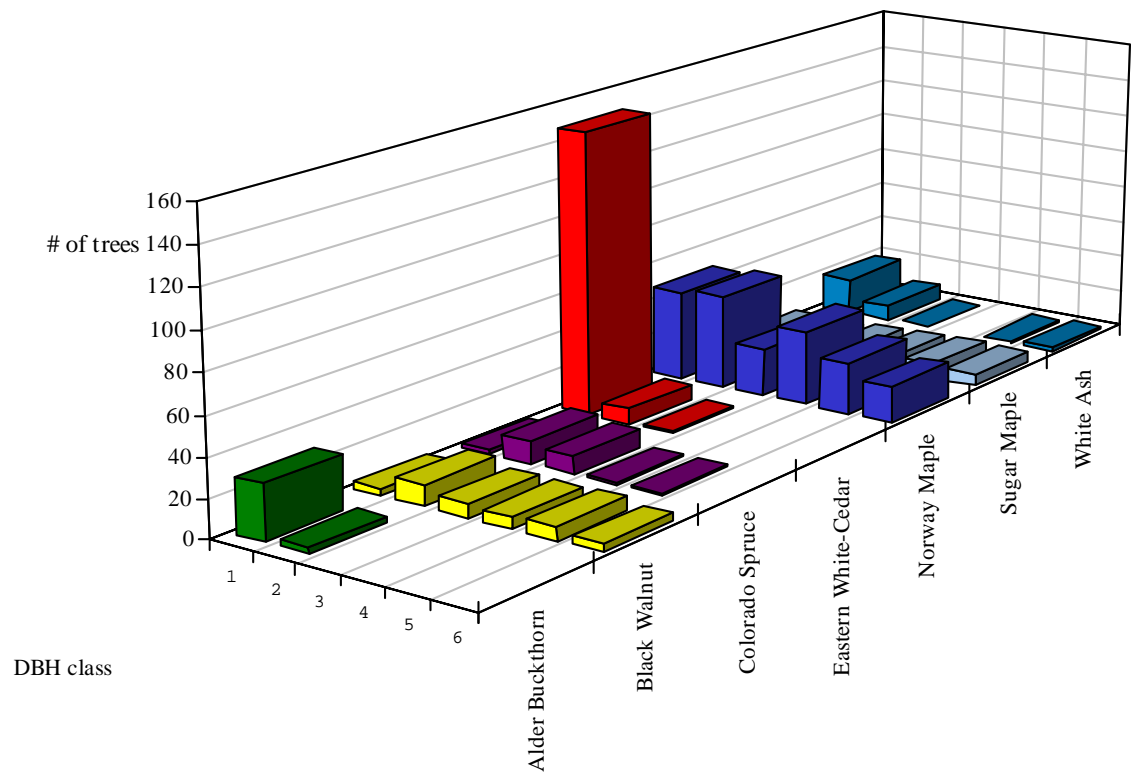


Figure - 6. Number of trees by species and each diameter class

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Diameter classes:

- 1- <15.5cm
- 2- 15.6-30.5cm
- 3- 30.6-45.5cm
- 4- 45.6-60.5cm
- 5- 60.6-76.5cm
- 6- >76.6cm



Distribution of Genera in the Community

Similar to species biodiversity, it has been suggested that no more than 10% of the trees in a community should be of the same genus (Moll, 1989).

Figure -7. illustrates the distribution of the genera which represent more than 10% of the total tree population.

Figure -7. Contribution of genera that represent more than 10% of the total number of trees in the community

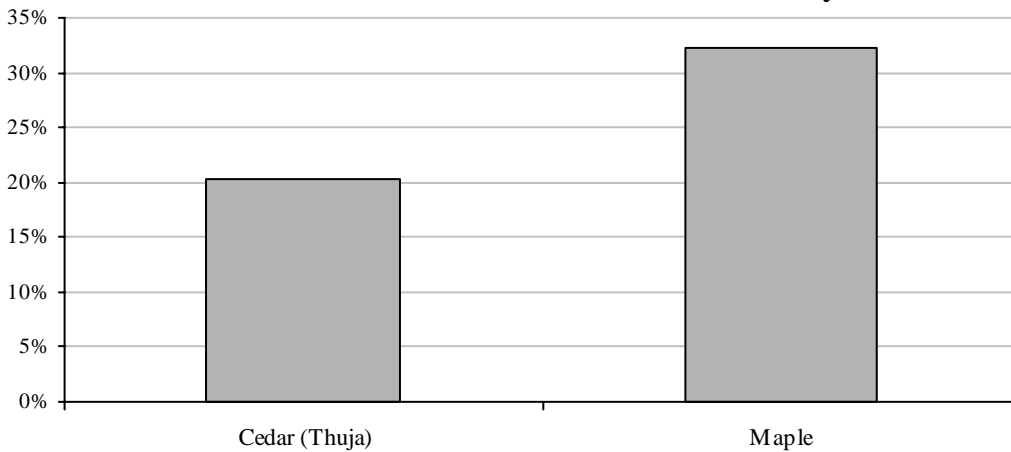


Table - 2. summarizes the number of trees by genus. The distribution of genera by diameter class is shown in Figure -8.

Table -2. Number of trees by genera

Genus	Number of Trees	Proportion of Total Number of Community Trees
<i>Maple</i>	268	32.33%
<i>Cedar (Thuja)</i>	168	20.27%
<i>Spruce</i>	70	8.44%
<i>Ash</i>	57	6.88%
<i>Walnut/Butternut</i>	39	4.70%
<i>Buckthorn</i>	31	3.74%

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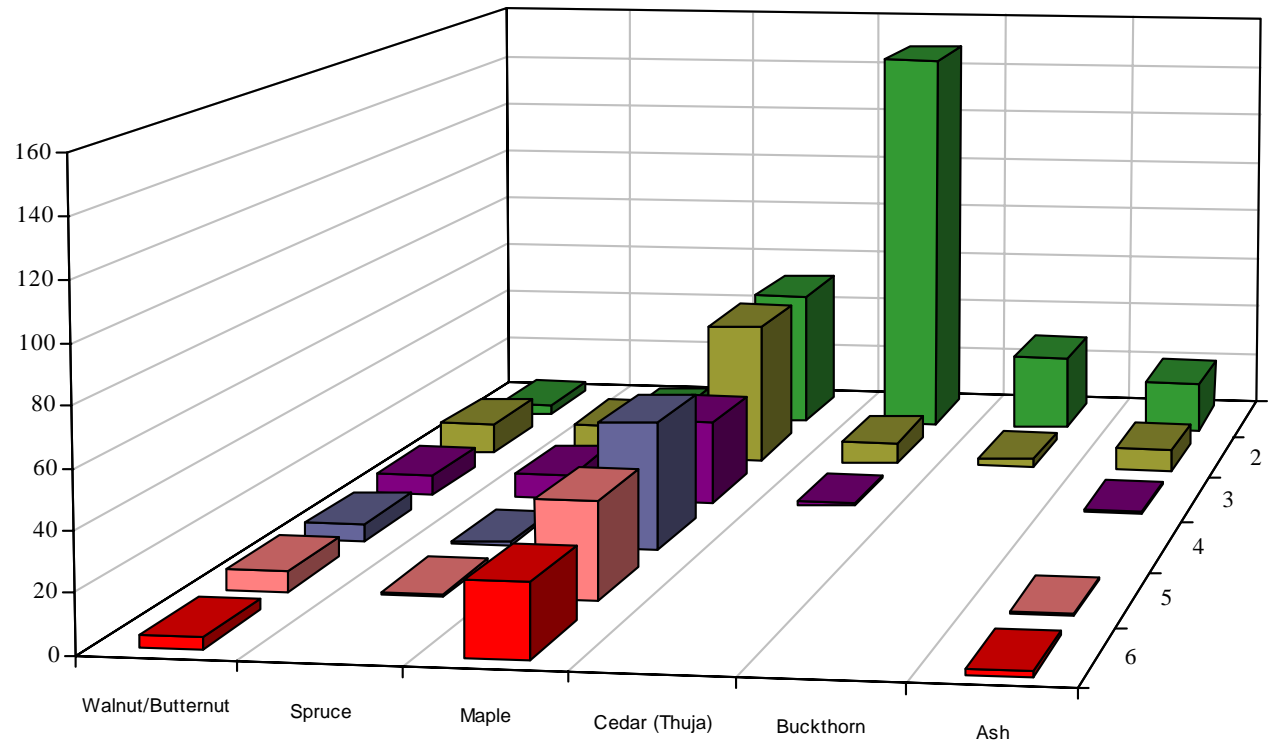
Table -2. Number of trees by genera

Genus	Number of Trees	Proportion of Total Number of Community Trees
<i>Apple/Crabapple</i>	26	3.14%
<i>Pine</i>	23	2.77%
<i>Linden-Basswood</i>	20	2.41%
<i>Lilacs</i>	17	2.05%
<i>Birch</i>	15	1.81%
<i>Cherry/Plum</i>	15	1.81%
<i>Elm</i>	11	1.33%
<i>Juniper</i>	10	1.21%
<i>Mountin Ash/Whitebeam</i>	9	1.09%
<i>Fir</i>	8	0.97%
<i>Yew</i>	7	0.84%
<i>Black Locust</i>	6	0.72%
<i>Mulberry</i>	5	0.60%
<i>Honey Locust</i>	4	0.48%
<i>Larch</i>	3	0.36%
<i>Douglas Fir</i>	2	0.24%
<i>Hickory</i>	2	0.24%
<i>Ironwood</i>	2	0.24%
<i>Magnolia</i>	2	0.24%
<i>Russian Olive</i>	2	0.24%
<i>Sumac</i>	2	0.24%
<i>Coffetree</i>	1	0.12%
<i>Oak</i>	1	0.12%
<i>Pear/Flowering Pear</i>	1	0.12%
<i>Serviceberry</i>	1	0.12%
<i>Willow</i>	1	0.12%
Total Number of Trees	829	



Distribution of Genera by Diameter Classes (only those >5% of the total tree population are shown)

Figure -8. Number of trees by genera and each diameter class



Diameter classes:
1- < 15.5cm
2- 15.6-30.5cm
3- 30.6-45.5cm
4- 45.6-60.5cm
5- 60.6-76.5cm
6- >76.6cm

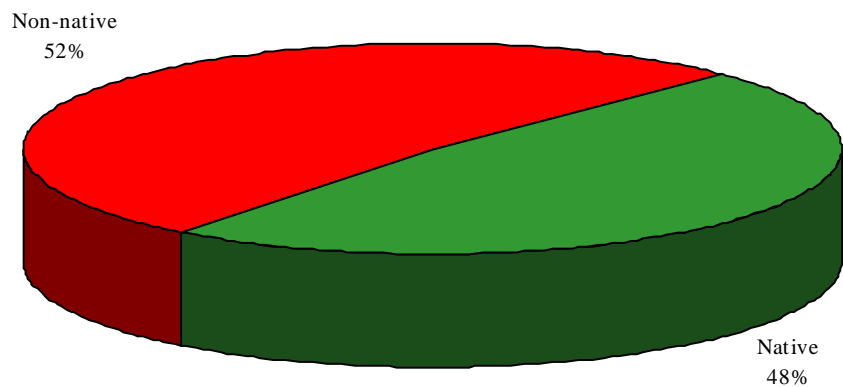
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Distribution of Native Trees, Deciduous and Conifers in the Community

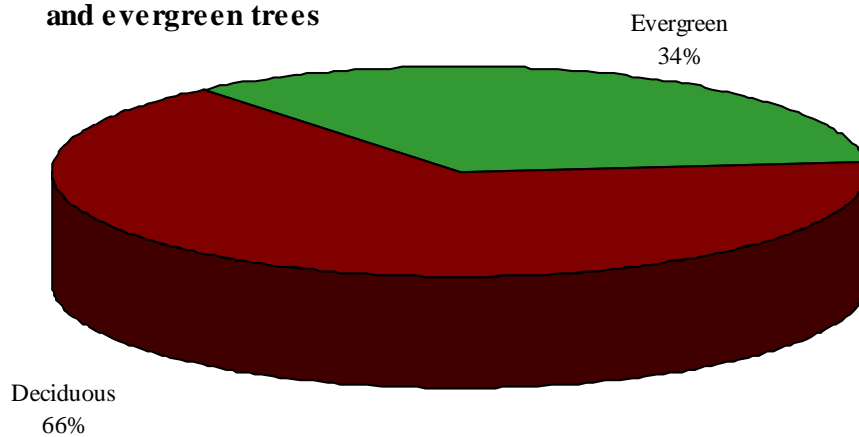
There is growing concern about the spread of “non-native” trees in our communities. Figure -9. illustrates the proportion of non-native trees in the community. We use the term non-native to mean those species which do not grow naturally in the region. (See Table -15).

Figure - 9. Proportion of native and non-native trees



Similarly, Figure -10. shows the proportion of coniferous and deciduous trees (softwoods and hardwoods) found in the community. Figure -11. and Figure -12. show the diameter distribution for native vs non-native, and coniferous vs deciduous species.

Figure - 10. Proportion of deciduous and evergreen trees





Distribution of Native vs. Non-native and Conifers vs Deciduous Trees by Diameter Classes

Figure -11. Number of native and non-native trees by each diameter class

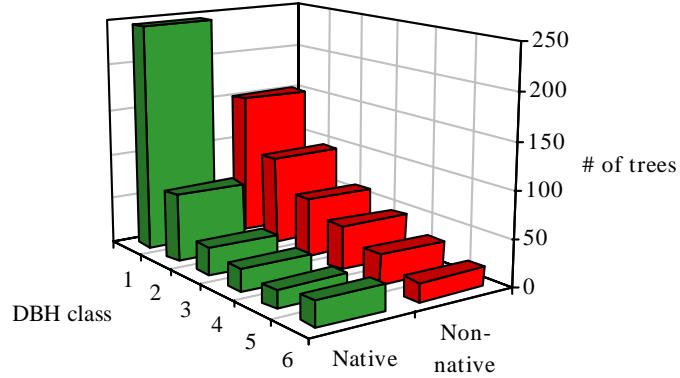
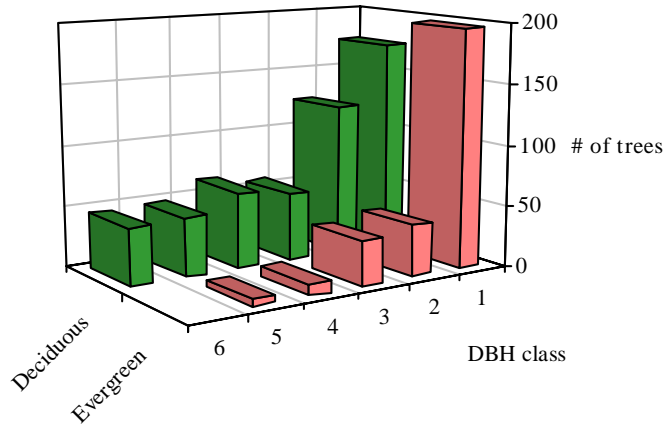


Figure - 12. Number of evergreen and deciduous trees by each diameter class



Diameter classes:

- 1- < 15.5cm
- 2- 15.6-30.5cm
- 3- 30.6-45.5cm
- 4- 45.6-60.5cm
- 5- 60.6-76.5cm
- 6- >76.6cm

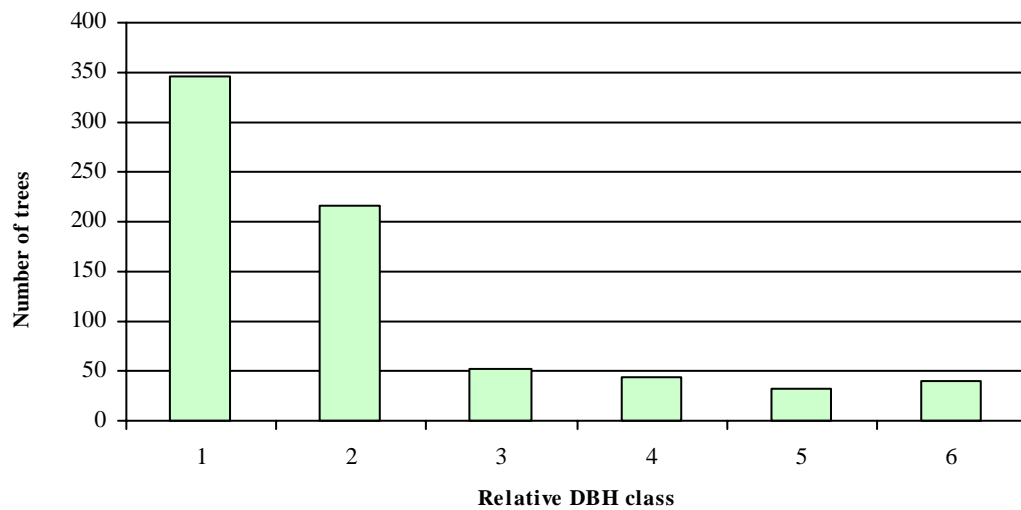
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Relative DBH Distribution in the Community

The relative DBH is one way of representing age class distribution in the urban forest. Relative tree diameter is the ratio (percent) between a tree diameter and the maximum diameter for that species. The relative DBH can be used to compare the distribution of different species or to compare species that have different growth characteristics. A relative DBH near 100% indicates a mature tree.

Figure 12a - Relative DBH distribution



- 25 % of maximum BDH = class 1
- 26-40 % of maximum BDH = class 2
- 41-55% % of maximum BDH = class 3
- 56-70% % of maximum BDH = class 4
- 71-85 % of maximum BDH = class 5
- >86% of maximum BDH = class 6

Diameter classes:

- 1- < 15.5cm
- 2- 15.6-30.5cm
- 3- 30.6-45.5cm
- 4- 45.6-60.5cm
- 5- 60.6-76.5cm
- 6- >76.6cm

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Tree Condition

Knowing the condition of urban trees and the state of the environment in which they exist, allows you to make better-informed decisions. Trees in urban environments are exposed to different stresses, including soil compaction, lack of nutrients, air pollution, de-icing salt, drought and confined space. These stresses have a negative impact on the condition and health of urban trees. As a result, urban trees have shorter life spans than trees in a natural forest and rarely reach a mature size. For example, the average lifespan of trees in the urban environment is 30 years, but the average lifespan of street trees is only 10 years (Moll, 1989). Extending the life span of urban trees can help to improve the quality of the urban environment significantly, as large trees have much more impact on the urban environment than smaller ones. Nowak (1994) estimated that, in Chicago, large individual trees have the greatest estimated pollution removal capability due to their relatively large leaf surface area. According to him, large healthy trees (larger than 76 cm in diameter at breast height) remove an estimated 60 to 70 times more pollution than small trees (less than 8 cm in diameter at breast height). Trees in both urban and natural forests have life cycles that include natural decline and death.

The process of decline for trees in all age classes is more intensive in an urban setting. This is one of the reasons why the quality of young trees should be high, bettering their ability to successfully replace older trees. Maintenance of both older and younger trees, therefore, is necessary to sustain the canopy cover in a community. Tree condition reflects the present structural integrity of a tree, as well as its state of health (CTLA 1992). The determination of tree condition helps to indicate existing and future problems with that tree. Assessing the condition of a tree facilitates decisions about maintenance and species choice for future plantings. Having an indication of the general condition of the urban forest helps in the long-term maintenance and identification of serious problems. Rating tree condition involves looking at the tree crown, the foliage, and the trunk and root characteristics. The condition rating is summarized in five classes:

- 5-EXCELLENT: tree is without any visible symptoms
- 4-GOOD: no apparent problem with
- 3-FAIR: minor problems with
- 2-POOR: major problems with
- 1-VERY POOR: extreme problems

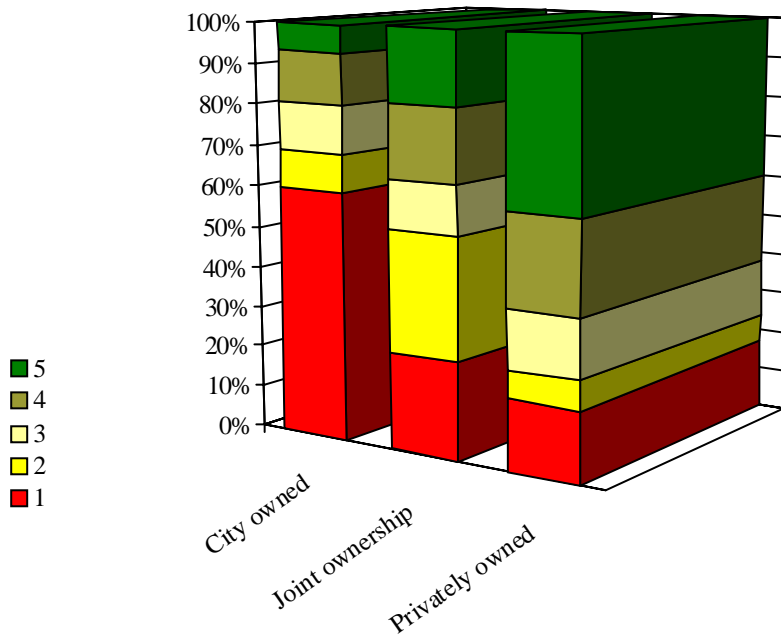
The condition of all trees by location is given in Appendix A, while the following chapter and the summary give an overview of tree condition by diameter class, species, genera, distribution of problem-free trees and private trees.



Condition of Trees on Public and Private Land

Moll (1989) states that a healthy city forest is usually accompanied by strong citizen support. Citizens have direct responsibility for the health of their own trees and indirect responsibility for the health of municipal trees. Privately owned trees are usually in better condition than publicly owned trees, especially street trees. Street trees grow in a much harsher environment than trees in private yards. They are exposed to different stresses such as drought, soil compaction, de-icing salt, vandalism, conflict with utilities, confined growing space, air pollution, etc. By contrast, trees on private lands have more available space for growth, they grow in a less stressed environment and, presumably, they get more attentive care than street trees. However, intense maintenance measures can help to improve tree health and extend tree life on both public and private lands. The condition of publicly and privately owned trees in the community is shown in Figure 13.

Figure - 13. The proportion of tree condition classes for municipal and private trees



5-EXCELLENT: tree is without any visible symptoms
4-GOOD: no apparent problem with a tree
3-FAIR: minor problems with a tree
2-POOR: major problems with a tree
1-VERY POOR: extreme problems

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Condition of Trees on Public and Private Land

Figure - 13a. The proportion of tree condition classes for public trees

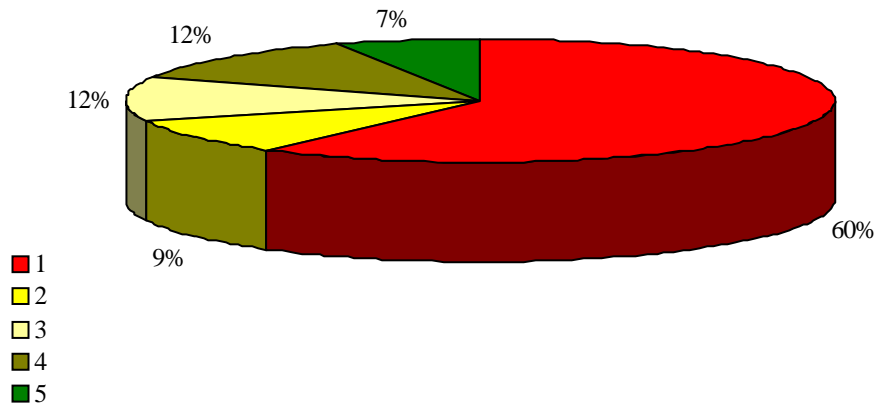
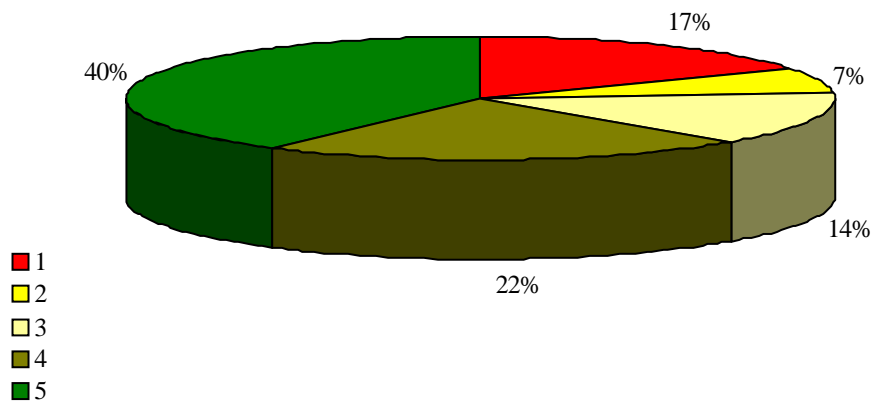


Figure - 13b. The proportion of tree condition classes for private trees



5-EXCELLENT: tree is without any visible symptoms
4-GOOD: no apparent problem with a tree
3-FAIR: minor problems with a tree
2-POOR: major problems with a tree
1-VERY POOR: extreme problems

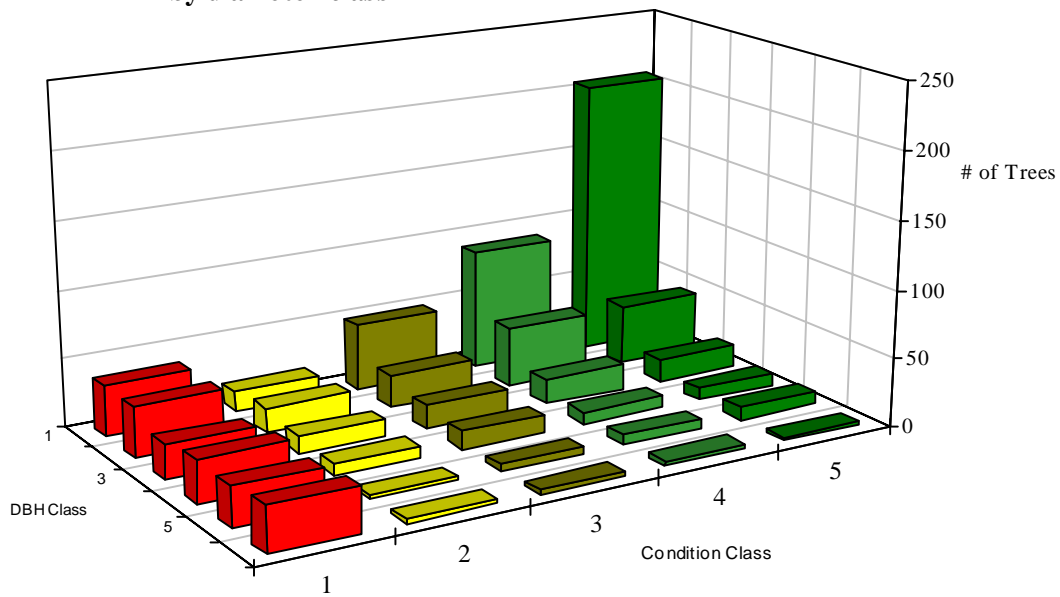
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Tree Condition by Diameter Classes

Maintaining good tree condition in each diameter class avoids a rapid loss of total number of trees due to the aging of the community forest. Larger trees in good health have a much more significant impact on the environment than younger ones, but the younger trees are essential in continuing the future urban forest canopy. Both proper diameter distribution and good tree health ensure that the loss of older trees due to natural decline will be a gradual, phased process, without the sudden absence of the larger diameter classes. The condition of trees in each diameter class in the community is shown in Figure 14. For clarity, Figure 15 shows the distribution of tree condition classes for the largest diameter classes.

Figure - 14. Distribution of five condition classes by diameter class



5-EXCELLENT: tree is without any visible symptoms
 4-GOOD: no apparent problem with a tree
 3-FAIR: minor problems with a tree
 2-POOR: major problems with a tree
 1-VERY POOR: extreme problems

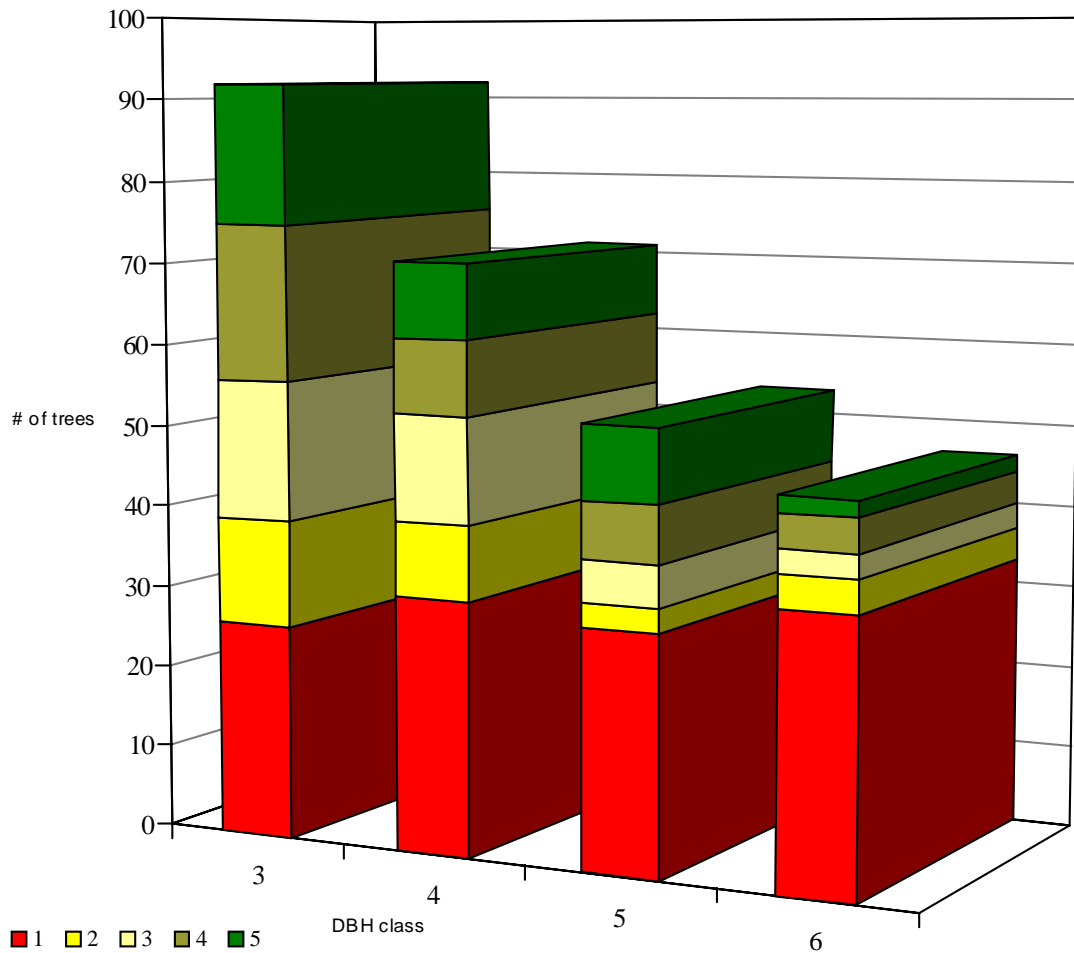
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Diameter classes:
 1- <15.5cm
 2- 15.6-30.5cm
 3- 30.6-45.5cm
 4- 45.6-60.5cm
 5- 60.6-76.5cm
 6- >76.6cm



Tree Condition by Diameter Classes

Figure - 15. Number of trees in each condition class grouped by diameter classes greater than 30 cm



5-EXCELLENT: tree is without any visible symptoms
 4-GOOD: no apparent problem with a tree
 3-FAIR: minor problems with a tree
 2-POOR: major problems with a tree
 1-VERY POOR: extreme problems

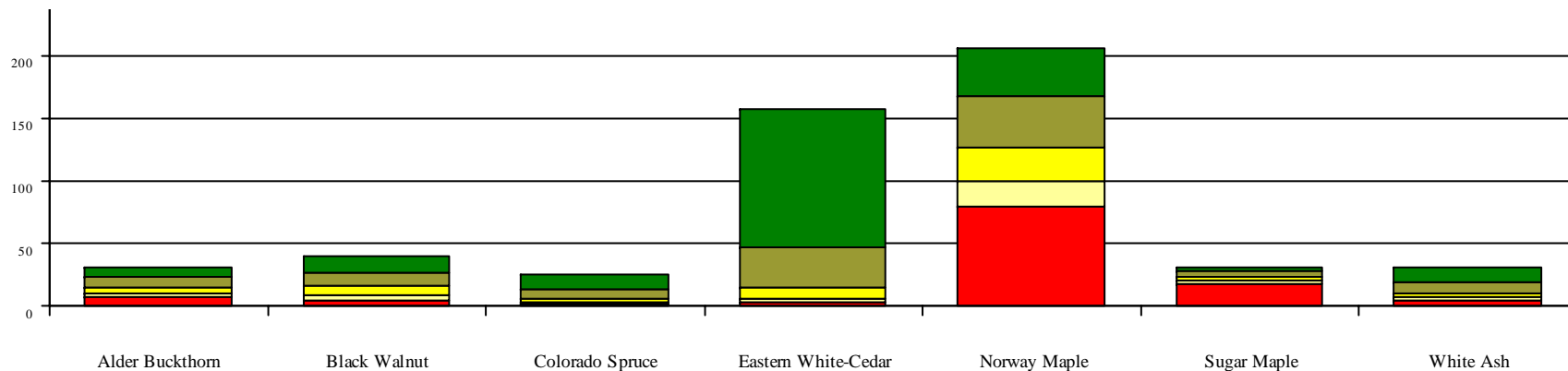
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Diameter classes:
 1- < 15.5cm
 2- 15.6-30.5cm
 3- 30.6-45.5cm
 4- 45.6-60.5cm
 5- 60.6-76.5cm
 6- >76.6cm



Species Condition

Many different tree species, cultivars, forms, and varieties are planted in urban areas. We can expect considerable variation in tree condition among species because of their ecological and biological characteristics. Some species are more tolerant of urban environments than others. More attention should be given to the condition of frequently planted species as these common trees give an indication of whether they should be planted more, or less often in the future. It also helps to indicate which species require more care and maintenance, and which species are more suited to a certain microenvironment. The distribution of tree condition classes for species with a frequency more than 25 trees is shown in Figure 16.



5-EXCELLENT: tree is without any visible symptoms

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4-GOOD: no apparent problem with a tree

3-FAIR: minor problems with a tree

2-POOR: major problems with a tree

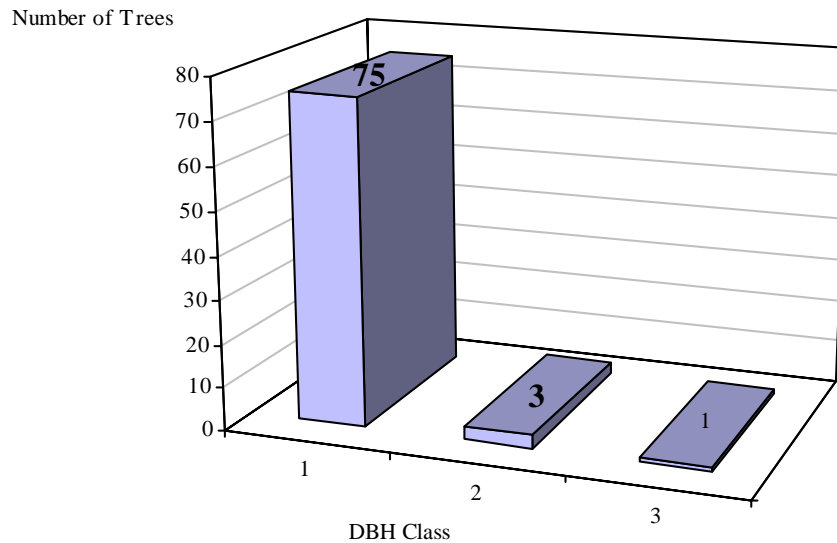
1-VERY POOR: extreme problems



Distribution of Trees with No Problems

Tree condition is based on characteristics of the tree crown, foliage, trunk, and roots. Symptoms such as defoliation, weak foliage, basal scars, rot, cavity, conks, pruning scars, exposed and trenched roots, are summarized to determine tree condition. Trees without any symptoms are ranked as excellent. The number of trees with no problems by diameter classes are shown in Figure 17. For clarity, Figure –18 shows the number of trees with no symptoms for species that are represented by more than 10 trees in each diameter class.

Figure -17. Number of trees with no problems by diameter class



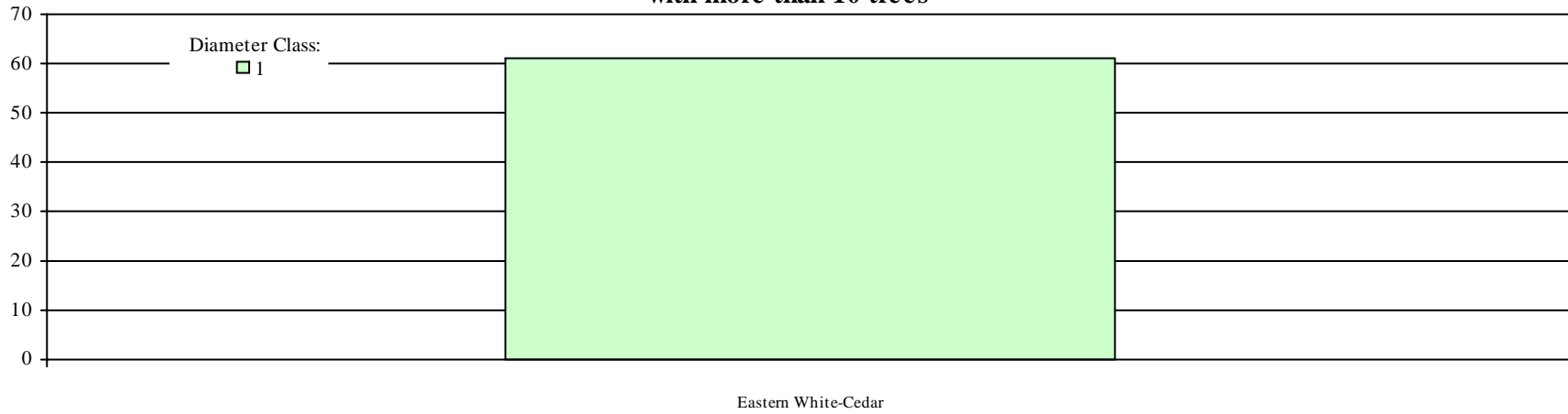
Diameter classes:
1- < 15.5cm
2- 15.6-30.5cm
3- 30.6-45.5cm
4- 45.6-60.5cm
5- 60.6-76.5cm
6- >76.6cm

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Distribution of Trees with No Problems by Species

Figure -18. Number of trees with no problems by six diameter classes for species that are represented with more than 10 trees



Diameter classes:

- 1- <15.5cm
- 2- 15.6-30.5cm
- 3- 30.6-45.5cm
- 4- 45.6-60.5cm
- 5- 60.6-76.5cm
- 6- >76.6cm

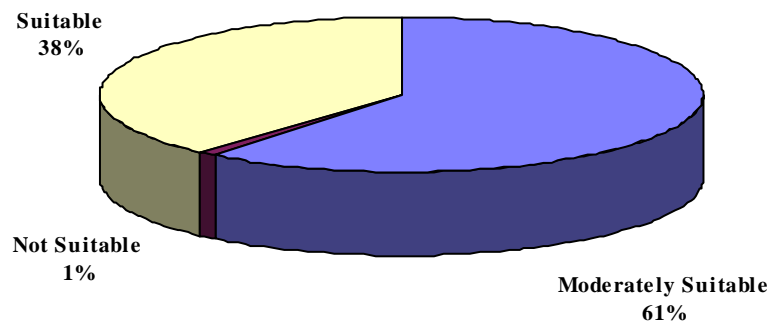
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Species Suitability in the Community

Some tree species are considered to be more suitable than others in an urban setting. For example, a weak-wooded willow is less appropriate than a stronger sugar maple. McPherson (1998) proposed examining the species distribution in a city's urban forest based on their suitability for that environment. In 1996 the Ontario Chapter of the International Society of Arboriculture undertook to update the species rating for the province (ISAO 1998). A total of 120 experts were surveyed to provide their opinions on species ratings. These ratings are based on a tree's characteristics such as: climate adaptability, growth characteristics, soil adaptability, resistance or tolerance to pests, pollution, maintenance requirements, allergenic properties, aesthetic value, etc. For example, a sugar maple would have a species rating of 80 - 100% (average =90% or 0.9) while willow would have a 40 - 60% rating (0.4-0.6). This analysis summarizes the species distribution based on these species rating (Figure 18a). The reader should note that the ISAO species rating system does NOT include "invasiveness" or place of origin (native vs. non-native). These are important considerations and are dealt with elsewhere in this report.

Figure 18a - Species suitability.



Species	# of trees	Species Rating	Species suitability
Alder Buckthorn	31	0.70	Moderately Suitable
American Elm	7	0.50	Moderately Suitable
American Mountainash	3	0.40	Moderately Suitable
Ash sp.	4	0.50	Moderately Suitable
Austrian Pine	8	0.80	Suitable

Species	# of trees	Species Rating	Species suitability
Japanese Crabapple(s)	6	0.50	Moderately Suitable
Japanese Maple	1	0.70	Moderately Suitable
Juniperus sp.	8	0.60	Moderately Suitable
Kentucky Coffetree	1	0.80	Suitable
Little-Leaf Linden	4	0.70	Moderately Suitable
Magnolia sp.	2	0.70	Moderately Suitable
Manitoba Maple	5	0.40	Moderately Suitable
Mugo Pine	1	0.60	Moderately Suitable
Norway Maple	206	0.70	Moderately Suitable
Norway Spruce	22	0.70	Moderately Suitable
Oriental Cedar	11	0.70	Moderately Suitable
Oriental Cherry	7	0.55	Moderately Suitable
Paper Birch	14	0.50	Moderately Suitable
Peach	5	0.70	Moderately Suitable
Pignut Hickory	2	0.75	Suitable
Red Cedar	1	0.60	Moderately Suitable
Red Oak	1	0.90	Suitable
Red Pine	1	0.60	Moderately Suitable
Red/Green Ash	20	0.60	Moderately Suitable
Rock Elm	1	0.55	Moderately Suitable
Russian Olive	2	0.50	Moderately Suitable
Scot's Pine	5	0.60	Moderately Suitable
Serviceberry	1	0.80	Suitable
Siberian Elm	3	0.30	Not Suitable

Species	# of trees	Species Rating	Species suitability
Balsam Fir	8	0.60	Moderately Suitable
Basswood	14	0.70	Moderately Suitable
Bigleaf Linden	2	0.60	Moderately Suitable
Birch sp.	1	0.55	Moderately Suitable
Black Ash	2	0.50	Moderately Suitable
Black Locust	6	0.30	Not Suitable
Black Maple	2	0.85	Suitable
Black Mulberry	1	0.80	Suitable
Black Walnut	39	0.80	Suitable
Canada Plum	1	0.55	Moderately Suitable
Chinese Juniper	1	0.60	Moderately Suitable
Colorado Spruce	25	0.80	Suitable
Common Pear	1	0.50	Moderately Suitable
Common Yew	2	0.70	Moderately Suitable
Crabapple(s)	20	0.50	Moderately Suitable
Douglas Fir	2	0.60	Moderately Suitable
Eastern White-Cedar	157	0.80	Suitable
European Larch	1	0.70	Moderately Suitable
European Mountain Ash	6	0.40	Moderately Suitable
European Yew	3	0.60	Moderately Suitable
French Lilac	17	0.80	Suitable
Golden Weeping Willow	1	0.35	Not Suitable
Honey Locust	4	0.60	Moderately Suitable
Ironwood	2	0.60	Moderately Suitable

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Species	# of trees	Species Rating	Species suitability
Silver Maple	23	0.45	Moderately Suitable
Sour Cherry	2	0.70	Moderately Suitable
Sugar Maple	31	0.85	Suitable
Sumac	2	0.80	Suitable
Tamarack	2	0.70	Moderately Suitable
White Ash	31	0.60	Moderately Suitable
White Mulberry	4	0.60	Moderately Suitable
White Pine	8	0.80	Suitable
White Spruce	23	0.80	Suitable
Yew sp.	2	0.70	Moderately Suitable



Trees that Could be a Potential Hazard and Trees in Conflicts

POTENTIAL HAZARD TREES

Different stresses affect tree health and condition that can lead to structural weakening. Through time and/or poor management, they can become hazardous to people and property. The criterion used to determine potential hazard trees is tree condition, which is indicated by structural defects. Trees are considered to be a potential problem if they receive a fair, poor, or very poor condition rating in conjunction with any one of the following defects: reduced height, conks, rot/cavity, or root trenching. Trees in the community that need to be given more attention are listed in Table 3. It should be noted that the objective here is to point out trees that could present potential hazards or become a liability. This approach should only be used as a guide to highlight which trees should receive more attention, either as potential hazards, or as trees in poor health. Further evaluation of hazardous trees, seriousness of the defects, and the risk they present is best done by a professional arborist.

TREES IN CONFLICTS

In an urban environment, trees compete for space, with each other, with urban structures and with human activities. Urban trees grow in conflict with buildings, structures, overhead wires, sidewalks and other trees. Such trees usually have shorter life spans, and thus the benefits they impart, decline. They also have a greater chance of becoming structurally weak. Both trees in existing conflict, and trees in potential conflict, should receive more attention than those without conflicts. These trees need to be specially maintained or, in some cases, removed, when they become a hazard or liability. Avoiding conflict is possible through careful planning and the consideration of the space requirements of a fully-grown tree. Potential hazard trees are listed in Table 3. Existing and potential conflicts of trees are summarized and discussed.



List of Public (City) and Jointly Owned Trees that could be Potential Hazard

Tree ID	Address	Tree #	Species Name	Hard Surface Area	DBH (cm)	# of Stems	Height Class	Unbalanced Crown	Reduced Height	Weak Foliage/Yellowing Leaves	Defoliation	Large Dead/Broken Branches	Poor Branch Attachment	Lean	Pruning Scars	Basal Scars	Conks	Rot or Cavity	Cracks	Confined Space	Confined Space	Surf. Roots	Trench/Root Cutting	Conf. with overhead wires	Conf. with structure	Conf. with sidewalk	Conf. with other tree	Conf. with traff. sign	Res. Field 1	Res. Field 2	Tree Condition	Comment
1	MonaghanNo. 1445	1	Norway Maple	50	54.3	3	1	0	1	1	2	3	1	1	0	0	1	3	1	1	0	2	n	n	e	e	n			1		
117	WellerNo. 623	1	Silver Maple	75	76.5	3	0	0	0	1	0	3	0	3	3	0	1	2	2	2	2	0	0	e	n	p	e	n			1	
1322	WalkerfieldNo. 606	1	Norway Maple	60	59	3	1	0	0	0	0	2	1	1	1	0	0	0	2	2	2	0	0	e	n	p	e	n			2	
141	AlbertusNo. 420	14	Norway Maple	70	74	3	0	1	0	1	2	1	0	3	3	0	0	2	2	2	2	0	0	E	E	P	E	N			1	
142	AlbertusNo. 420	15	Norway Maple	90	66	3	3	3	0	0	2	1	2	0	2	1	0	2	2	2	2	0	0	E	N	N	E	N			1	
143	WalkerfieldNo. 616	1	Norway Maple	40	84.5	3	0	0	0	3	2	3	0	2	0	0	0	1	2	2	2	0	0	p	n	n	n	n			1	
146	WalkerfieldNo. 616	4	Norway Maple	40	62	3	0	0	0	1	1	3	0	2	2	0	1	3	2	2	2	0	0	e	e	e	e	n			1	
154	WalkerfieldNo. 614	1	Pignut Hickory	40	45.5	3	0	0	0	0	0	3	0	2	0	0	0	1	2	2	2	0	0	e	n	n	n	n			2	
19	MonaghanNo. 1445	20	Sugar Maple	65	61.3	3	1	1	0	2	3	3	0	2	2	0	3	3	2	2	2	0	0	n	n	p	n	n			1	
2	MonaghanNo. 1445	2	Sugar Maple	35	48	3	1	0	1	1	3	2	0	0	0	0	0	0	3	0	0	0	0	n	n	n	n	n			1	
214	WellerNo. 635	38	Silver Maple	40	79.5	3	0	0	0	1	0	2	0	1	0	0	0	0	1	1	1	0	0	N	P	N	E	N			2	
215	WellerNo. 635	39	Silver Maple	40	74.5	3	1	0	0	1	1	2	0	1	0	0	0	1	1	1	1	0	0	N	N	N	E	N			1	
216	WellerNo. 645	1	Sugar Maple	25	31	3	1	1	0	1	0	1	0	1	0	0	0	0	1	1	1	0	0	N	N	N	E	N			1	
217	WellerNo. 645	2	Silver Maple	25	64	3	1	0	0	1	0	2	0	2	0	0	3	1	1	1	1	0	0	N	N	N	E	N			1	
232	WalkerfieldNo. 652	1	Norway Maple	25	31	2	2	0	0	2	0	3	0	2	0	0	1	0	0	0	0	0	0	n	n	n	e	n			1	
233	WalkerfieldNo. 652	2	Norway Maple	25	53.5	3	1	0	0	1	1	3	0	2	2	0	1	3	0	0	0	0	2	n	n	n	e	n			1	
237	WalkerfieldNo. 644	1	Norway Maple	40	93	3	0	0	0	0	2	0	0	2	0	0	1	3	2	2	2	0	0	n	e	n	e	n			1	
246	WellerNo. 659	1	Silver Maple	90	109	3	0	0	0	1	1	2	0	0	3	0	0	0	2	2	2	0	0	n	n	n	e	n			1	
250	WellerNo. 661	1	Silver Maple	30	92.5	3	0	0	0	1	1	2	0	2	0	0	1	0	1	1	1	0	0	n	p	n	e	n			1	
3	MonaghanNo. 1445	3	Silver Maple	20	109	3	0	0	1	1	1	2	0	2	1	0	0	0	1	1	1	0	0	n	n	n	p	p			1	
317	HomewoodNo. 658	2	Norway Maple	40	48	3	0	0	0	0	1	1	0	2	0	0	0	1	1	1	1	0	0	E	N	E	E	N			1	
322	WalkerfieldNo. 661	1	Norway Maple	30	45.7	3	1	0	0	1	1	1	0	0	0	1	0	0	1	1	1	0	0	n	p	n	e	n			1	
323	WalkerfieldNo. 661	2	Sugar Maple	30	57	3	0	0	0	0	2	1	0	2	0	0	1	0	1	1	1	0	0	n	p	n	e	n			2	
361	HomewoodNo. 636	2	Sugar Maple	15	60	3	0	0	0	1	2	3	0	0	2	0	0	1	1	1	1	0	0	N	N	N	E	N			1	
364	HomewoodNo. 636	5	Norway Maple	10	49	3	0	0	0	1	1	2	0	1	0	0	0	0	1	1	1	0	0	E	P	N	E	N			1	
412	WalkerfieldNo. 631	4	Norway Maple	50	63.5	3	2	0	0	0	1	1	0	2	0	0	1	0	2	2	2	0	0	e	p	n	e	n			1	
419	HomewoodNo. 632	1	Norway Maple	40	60.5	3	0	0	0	0	0	2	0	2	0	0	1	0	1	1	1	0	0	E	N	N	E	E			2	
423	HomewoodNo. 628	1	Norway Maple	50	87.5	3	0	0	0	0	2	2	1	3	1	0	1	0	2	2	2	0	0	E	N	E	P	N			1	
442	HomewoodNo. 620	1	Norway Maple	25	69	3	2	0	0	1	2	2	0	3	1	0	2	2	1	1	1	0	0	E	N	N	E	N			1	
450	HomewoodNo. 608	1	Norway Maple	60	68	3	0	0	0	0	1	3	0	1	0	0	1	0	2	2	2	0	1	E	N	P	E	N			1	
461	HomewoodNo. 616	1	Norway Maple	40	99	3	0	0	0	0	2	2	0	1	0	0	1	1	1	1	1	0	0	E	E	N	E	N			1	
473	WalkerfieldNo. 615	1	Norway Maple	40	47	3	0	0	2	3	3	2	2	2	2	0	3	2	3	3	0	0	e	n	n	n	n			1		
507	GordonNo. 1346	1	Black Ash	60	46	3	0	0	1	1	0	3	0	0	0	0	0	3	3	1	1	0	0	N	N	N	P	E			1	
508	GordonNo. 1346	2	Sugar Maple	60	68.7	3	1	1	0	1	3	2	0	2	1	0	1	3	1	1	1	0	0	P	N	N	E	P			1	
509	GordonNo. 1346	3	Sugar Maple	60	71	3	0	0	0	0	1	3	0	0	0	0	1	3	1	1	1	0	0	N	N	N	E	N			1	
510	GordonNo. 1352	1	Norway Maple	60	42	3	1	0	0	1	0	2	0	0	0	0	0	1	1	1	1	0	1	N	N	N	E	N			1	
530	AlbertusNo. 375	1	Norway Maple	25	63.5	3	0	0	0	1	1	1	0	2	0	0	1	0	1	1	1	0	1	N	N	E	E	P			1	
534	GilmourNo. 634	1	Norway Maple	40	32	3	1	0	1	1	2	2	0	0	1	0	0	0	2	2	2	0	0	P	P	N	E	N			1	
535	GilmourNo. 634	2	Norway Maple	50	48	3	0	0	0	1	1	3	0	0	1	0	1	3	2	2	2	0	0	P	N	E	P	N			1	
541	GilmourNo. 640	1	Little-Leaf Linden	50	50	3	0	0	0	0	0	2	0	0	1	0	0	1	1	1	1	0	0	N	N	N	E	N			2	
561	GilmourNo. 650	2	Sugar Maple	60	52.5	3	2	0	1	0	1	3	0	0	1	0	0	3	1	1	1	0	0	N	N	N	E	N			1	
573	GilmourNo. 628	1	Norway Maple	45	42	3	0	1	0	1	3	1	0	2	0	1	1	3	2	2	2	0	0	E	N	P	E	N			1	
584	GilmourNo. 632	1	Norway Maple	50	45.5	3	1	0	1	1	2	2	1	0	2	0	0	2	1	1	1	0	0	N	N	P	P	N			1	
585	GilmourNo. 632	2	Norway Maple	50	81	3	1	1	0	1	1	2	0	0	1	0	0	1	1	1	1	0	0	E	E	E	P	N			1	
599	HomewoodNo. 627	1	Norway Maple	35	43	3	1	0	1	1	1	1	1	1	3	1	0	3	1	2	2	0	1	N	N	N	P	N			1	
604	HomewoodNo. 629	2	Norway Maple	30	81.5	3	1	2	0	0	2	2	0	2	0	0	3	1	2	2	2	0	0	E	E	N	E	N			1	

Tree ID	Address	Tree #	Species Name	Hard Surface Area	DBH (cm)	# of Stems	Height Class	Unbalanced Crown	Reduced Height	Weak Foliage/Yellowing Leaves	Defoliation	Large Dead/Broken Branches	Poor Branch Attachment	Lean	Pruning Scars	Basal Scars	Conks	Rot or Cavity	Cracks	Confined Space	Confined Space	Surf. Roots	Trench/Root Cutting	Conf. with overhead wires	Conf. with structure	Conf. with sidewalk	Conf. with other tree	Conf. with traff. sign	Res. Field 1	Res. Field 2	Tree Condition	Comment	
608	HomewoodNo. 601	1	Norway Maple	80	76		3	1	0	0	1	1	3	0	2	3	1	2	3	2	2	0	0	P	N	N	E	P			1		
609	HomewoodNo. 601	2	Norway Maple	85	83		3	0	0	0	2	1	2	0	3	0	0	1	1	2	2	0	0	E	N	N	E	E			1		
615	HomewoodNo. 611	1	Norway Maple	25	82		3	0	0	0	1	1	2	1	2	0	0	0	1	1	1	0	0	N	N	N	N	N			1		
631	GilmourNo. 614	2	Norway Maple	50	72		3	2	0	0	1	2	1	0	2	0	0	3	3	3	3	0	0	N	N	N	E	N	CAB		1		
638	GilmourNo. 618	1	Norway Maple	70	76.7		3	0	0	0	0	1	2	1	1	1	0	0	2	1	1	0	0	E	N	P	N	N			1		
645	GilmourNo. 651	1	Black Walnut	30	80		3	0	0	0	0	2	1	0	2	1	0	1	1	2	2	0	0	E	N	N	E	N			1		
661	GordonNo. 1328	1	Silver Maple	50	94.5		3	0	0	0	0	0	2	0	0	0	0	0	3	2	2	0	0	N	N	N	N	N			2		
665	GordonNo. 1328	5	Silver Maple	25	97		3	0	0	0	0	0	2	0	0	0	0	1	0	2	2	0	1	N	N	N	P	P			1		
668	GordonNo. 1324	1	Red/Green Ash	0	48		3	0	0	1	1	1	2	0	2	0	0	0	0	0	0	0	0	n	n	n	e	n			1		
677	CharlotteNo. 658	1	Norway Maple	20	97		3	0	0	0	1	2	2	1	1	2	0	0	1	2	2	0	0	E	N	N	N	N			1		
692	CharlotteNo. 634	3	Black Locust	25	34		3	2	1	0	0	3	0	0	0	0	0	3	0	2	2	0	0	E	N	P	E	N			1		
699	GilmourNo. 633	1	Norway Maple	25	70		3	1	0	2	2	1	2	1	2	2	0	1	3	1	1	1	0	2	N	N	N	E	N			1	
7	MonaghanNo. 1445	6	Norway Maple	70	58.4		3	0	0	0	1	1	2	0	2	1	0	3	1	1	1	0	0	e	n	e	e	p			1		
700	GilmourNo. 633	2	Norway Maple	50	73		3	0	0	1	0	1	3	0	2	3	0	3	3	3	3	0	0	E	N	N	E	P			1		
718	GilmourNo. 619	1	Sugar Maple	40	36.5		3	1	0	0	2	1	2	0	1	1	0	0	1	1	1	0	0	E	N	N	P	N			1		
725	GilmourNo. 627	1	Norway Maple	60	52		3	0	1	0	0	0	3	0	1	1	0	3	3	2	2	0	0	E	N	N	E	N			1		
728	GilmourNo. 631	1	Norway Maple	50	75		3	1	3	0	1	2	3	1	3	1	0	2	3	2	2	0	0	E	N	E	E	N			1		
729	GilmourNo. 631	2	Norway Maple	50	80		3	2	0	0	0	1	3	0	2	1	0	1	3	2	2	0	1	E	E	E	E	N			1		
749	CharlotteNo. 626	1	Norway Maple	65	72		3	1	0	2	2	2	3	1	2	1	1	0	3	2	2	0	0	E	P	E	P	P			1		
75	MonaghanNo. 1403	5	Norway Maple	75	60		3	1	0	1	1	0	2	2	3	1	0	0	0	2	2	0	0	e	n	p	e	p			1		
750	CharlotteNo. 626	2	Norway Maple	50	80		3	1	0	0	1	1	2	0	3	0	0	1	1	1	1	0	0	E	N	P	E	N			1		
753	GilmourNo. 601	1	Norway Maple	30	55.5		3	0	0	1	0	0	3	0	1	1	0	0	0	1	1	0	0	E	N	E	P	N			2		
757	GilmourNo. 609	1	Norway Maple	50	83		3	1	0	0	1	0	2	0	2	0	0	0	0	1	1	0	0	E	P	N	P	N			1		
759	GilmourNo. 611	1	Norway Maple	40	64		3	0	0	0	1	0	3	0	0	0	0	0	3	1	1	0	0	E	N	N	P	N			1		
761	GilmourNo. 615	1	Norway Maple	60	85		3	0	0	0	0	1	3	0	1	1	0	0	3	1	1	0	0	E	N	E	P	N			1		
88	WellerNo. 607	1	Silver Maple	80	88		3	2	0	0	2	3	2	2	2	2	1	0	0	3	3	3	0	3	E	N	E	E	N			1	

This list is generated from data on overall tree condition, structural problems and conflicts.

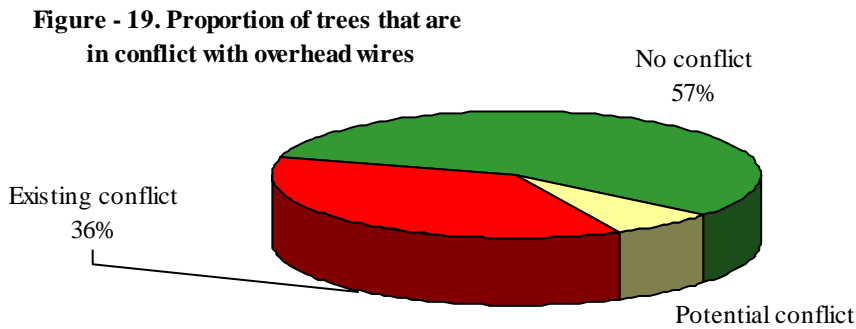
Total Number of Trees that could be Potential Hazard:

72



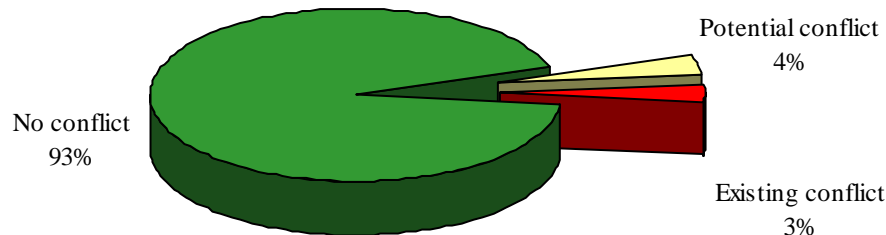
Conflicts between Trees and Overhead Wires or Sidewalks

Urban trees often come into conflict with overhead wires. Although these lines look harmless enough, they can be extremely dangerous for the tree and for people. Damage to the wire by the tree could cause a disruption in the service provided by those wires. Trees in conflict with overhead wires ultimately require pruning to maintain proper clearance. Periodic pruning can lead to poorer condition and a shortened life span of the tree. Conflict with overhead wires usually is typical of street trees, but is also not uncommon with backyard trees. Figure 19 shows the proportion of trees in the community that have existing (e) or potential (p) conflict with overhead wires. A point to note is that trees in conflict with overhead wires are already of large size, and therefore are among the more valuable trees existing in a community.



Trees growing in urban spaces such as on streets, parking lots, and other paved areas usually do not have enough space for their roots. Trees growing in such spaces are more subject to girdling roots, drought effect, and other secondary problems such as pests and disease. This could be easily prevented by planting the right tree in the right place but if the conflict already exists, these trees should get more attention. The proportion of trees in the community that are either in existing (e), potential (e) or no conflict (n) with sidewalks is shown in Figure -20.

Figure - 20. Proportion of trees that are conflict with sidewalk

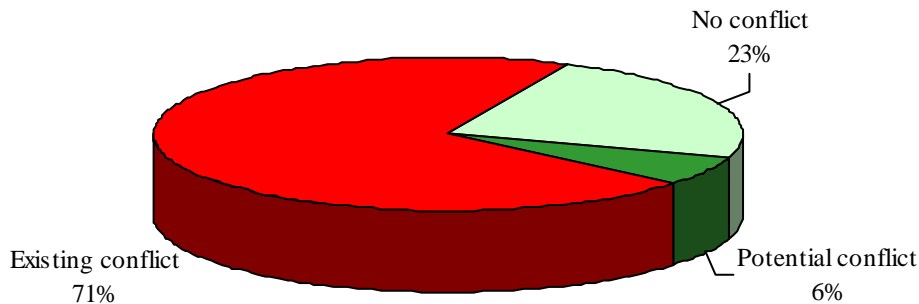




Tree Conflict with Other Tree and Structure

Urban trees are often planted too closely for aesthetics reasons, or the misjudgment of the size of a fully grown tree. Such trees have reduced crown and leaf area due to competition for space and light on a particular side of the tree crown. Smaller trees planted under the crowns of larger ones do not have enough light and space for regular growth. This can result in an irregular crown, or poor tree condition. At the same time their trunks are straight and free of branches. Figure - 21 shows the proportion of trees in existing (e) and potential (p) conflict with other trees in the community.

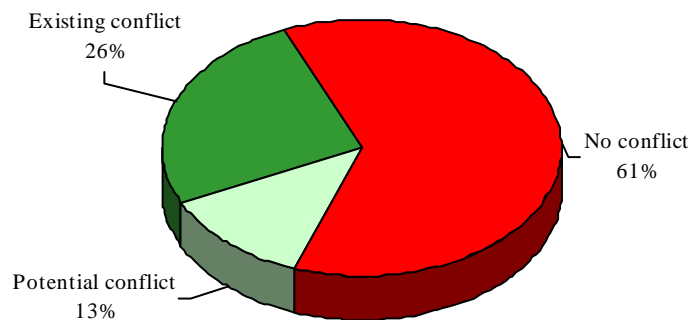
Figure - 21. Proportion of trees in the community that are in conflict with other tree



Trees planted too close to buildings, or walls have unbalanced crowns, leaning trunks, reduced crown sizes, restricted roots, etc. This could be easily prevented by planting the right tree in the right place but if the conflict already exists, these trees should get more attention.

The proportion of trees in the community that are either in existing (e), potential (e) or no conflict (n) with structure is shown in Figure -22.

Figure - 22. Proportion of trees in the community that are in conflict with structure





Candidate Heritage Trees, Community and Regionally Rare Tree Species

If we are lucky, our landscape will include those magnificent and massive trees that inspire us. They represent the same cultural and historical heritage as old buildings or monuments. These heritage trees are rare, and as living organisms, require special protection and care. The presence of large trees in cities is valuable not only from a biological and ecological perspective, but also from a social one. Large trees also have very important educational significance for a community. These special trees are also referred to as heritage, significant, historical or champion trees. Determining significant and potential candidate heritage trees could be a first step towards tree protection and conservation in the community. The focus of this report is to point out trees of notable size in the community that may be considered as significant and/or candidate heritage trees. The main criterion for candidate heritage trees is diameter at breast height (DBH). Individuals with a DBH greater than half of the maximum size for the species in question (Farrar 1995) (See Table 15) are first considered. The program suggests a meaningful diameter for all species; useful for comparing with your trees in consideration of heritage candidacy, as well as gives a species weight to each tree. However, there are possibilities for a community to adapt these two criteria to their own situation, and is allowed for in the computer program. Trees that meet the size and species criteria, and have at least a good (3) tree condition rating are marked as candidate heritage trees. For example some communities could consider large, healthy Manitoba maples as potential heritage trees, while others would not consider a similar tree as a heritage because of the species. Candidate heritage trees are listed in Table 4. The recommendations for significant and heritage trees in the community are discussed in the summary of the report. Species representing less than one percent in a community, are listed in Table 5 and 6.

Both the presence and absence of heritage trees in a community forest is meaningful for further management and tree protection. For example, some older communities will probably have larger trees and they can consider not only a protection by-law but also special maintenance techniques to keep them in a good condition. At the same time, newly built communities with smaller trees need to reach this goal by protecting young, healthy trees.

Some trees are rare in a community either because they seldom occur in native forests or they are not very common as landscape trees. These trees can be considered very interesting from an educational point of view. Such species, representing less than one percent in a community, are listed in Table - 5 and 6.



Potential Significant and Candidate Heritage Trees

Table - 4. Candidate heritage trees listed by location

Location	Ownership	Tree Number	Common Name	Diameter (cm)	Diameter Considered for Heritage Significance (cm)	Heritage Diameter Approached in %	Tree Condition
620 Charlotte	Privately owned	738	<i>Silver Maple</i>	149	208	72%	3
616 Charlotte	Privately owned	770	<i>White Spruce</i>	48	69	70%	3
616 Charlotte	Privately owned	768	<i>Colorado Spruce</i>	44	46	96%	3
1352 Gordon	Privately owned	514	<i>White Spruce</i>	46	69	67%	3
1352 Gordon	Privately owned	512	<i>Colorado Spruce</i>	46	46	100%	5
657 Homewood	Privately owned	498	<i>Silver Maple</i>	100	208	48%	5
608 Homewood	Privately owned	453	<i>Balsam Fir</i>	37.5	52	72%	5
1395 Monaghan	Privately owned	493	<i>White Spruce</i>	45	69	65%	5
604 Walkerfield	City owned	77	<i>Red/Green Ash</i>	86	60	143%	3
610 Walkerfield	Privately owned	171	<i>Colorado Spruce</i>	72	46	157%	5
635 Weller	City owned	177	<i>White Spruce</i>	47	69	68%	4
651 Weller	Privately owned	225	<i>White Spruce</i>	46	69	67%	5

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Tree Condition:

Excellent (No problem(s)) - 5

Good (No apparent problem(s)) - 4

Fair (Minor problem(s)) - 3

Poor (Major problem(s)) - 2

Very Poor (Extreme problem(s)) - 1



City and Jointly Owned Potential Significant and Candidate Heritage Trees

Table - 4a. Public (city) and jointly owned candidate heritage trees listed by location

Location	Tree Number	Common Name	Diameter (cm)	Diameter Considered for Heritage Significance (cm)	Heritage Diameter Approached in %	Tree Condition
604 Walkerfield	77	<i>Red/Green Ash</i>	86	60	143%	3
635 Weller	177	<i>White Spruce</i>	47	69	68%	4

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Tree Condition:
Excellent (No problem(s)) - 5
Good (No apparent problem(s)) - 4

Fair (Minor problem(s)) - 3
Poor (Major problem(s)) - 2
Very Poor (Extreme problem(s)) - 1



Regionally Rare Native Trees

Some species rarely occur in native forests either because they are out of their range or they are not dominant species in a forest community (Farar, 1995; Argus et al., 1982-87) (See Table -15). Their presence in a community forest is listed in Table - 5 regardless of their frequency in the community, condition or size (>20cm).

Table - 5. List of regionally rare native trees by their location

Common Name	Address	Tree ID	Diameter (cm)
-------------	---------	---------	---------------

There are no regionally rare native tree species in the community



Tree species that make up less than one percent (1%) of the total tree number of trees

Humans have planted a variety of trees in and around their homes since ancient times. A preference for new and unusual trees has resulted in about 1,500 major landscape trees and 5000 species, cultivars and varieties in North American Nurseries (Jacobson 1996). Many of these are sporadically planted and do not have a significant impact on urban forest cover. However, the numerous species and cultivars found in urban areas have an impact on biodiversity. Table 6 gives the list of species that make up less than one percent (1%) of the total tree population. They are grouped by their origin as native or alien. For more information on the listed species see Table 15.

Table - 6. Species representing less than 1% of the total tree population, listed by origin

Common name	Number of Trees	Native Species
<i>American Elm</i>	7	Yes
<i>Balsam Fir</i>	8	Yes
<i>Black Locust</i>	6	No
<i>Common Pear</i>	1	No
<i>European Mountain Ash</i>	6	No
<i>Honey Locust</i>	4	Yes
<i>Ironwood</i>	2	Yes
<i>Japanese Maple</i>	1	No
<i>Kentucky Coffetree</i>	1	Yes
<i>Little-Leaf Linden</i>	4	No
<i>Manitoba Maple</i>	5	No
<i>Oriental Cherry</i>	7	No
<i>Red Oak</i>	1	Yes
<i>Russian Olive</i>	2	No
<i>Siberian Elm</i>	3	No
<i>Tamarack</i>	2	Yes
<i>White Pine</i>	8	Yes



Summary of Tree Valuation Based on CTLA Approach

Trees in cities and communities have mainly been planted for beauty and to provide shade. Lately, many other values, such as environmental and economic benefits have been recognized. The less tangible aesthetic value of trees and the value they add to the property are realized mostly by the owners. The aesthetic value of trees is very subjective and difficult to measure. However, the economic value of trees can be estimated by their impact on property value. Research shows that the value trees add to a particular property ranges from 15 % to 25 % of the total value. Approximately 15% of the house and lot price (CLTA 1992) may be related to tree value. Petit et al. (1995) quote developers who estimate that the amount could be between 20% and 30%. Each tree and shrub has a monetary value that represents its replacement cost. A number of different formulae can be used to calculate the appraised value of a tree. In this report, the estimated value of trees is determined using an approach by the Council of Tree and Landscape Appraisers (CTLA 1992). This procedure calculates a value based on cross-sectional area at DBH. This value is calculated using the current value of trees available for transplanting. This basic price is then adjusted for species, tree condition and location. It should be noted that the objective for this report is to determine a conservative value based on average conditions. The approach applied here may overestimate some trees, but will also underestimate others. It will, nonetheless, yield a credible value for all the trees in the community, or for a group of trees, but should not be used for individual tree valuation.

It should be noted that the objective for this report was to determine a conservative value based on average conditions. The approach applied here, may over-estimate some trees but will also under-estimate others. It will yield a credible value for all the trees in the community, or for a group of trees but should not be used for individual trees valuation.



Tree Value Based on CTLA Approach

The value of trees by ownership in the community is shown in Figure 24. The value of community trees summarized by ownership is shown in Table 7.

Figure 25 shows the value of community trees by street.

Figure 25. Tree value based on CTLA by the ownership

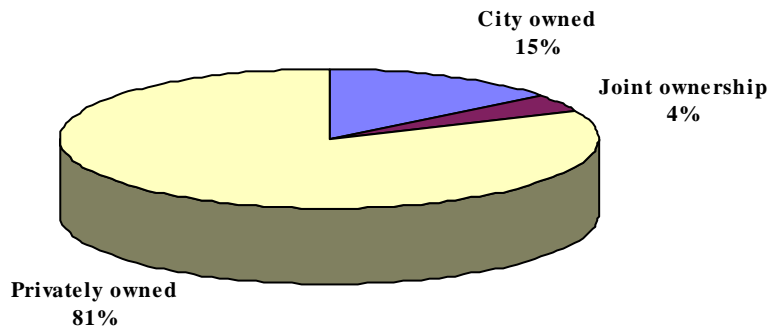


Table - 7. Tree Value based on CTLA approach on public and private land

Street	Tree Value	Proportion of Total Value of Community Trees
City owned		
Albertus	\$367.80	0.040%
Charlotte	\$11,216.51	1.222%
Gilmour	\$20,826.39	2.269%
Gordon	\$12,666.02	1.380%
Homewood	\$33,726.67	3.675%
Monaghan	\$11,488.83	1.252%
Walkerfield	\$21,046.68	2.293%
Weller	\$22,247.47	2.424%

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Table - 7. Tree Value based on CTLA approach on public and private land

Street	Tree Value	Proportion of Total Value of Community Trees
City owned	\$133,586.38	14.55%
Joint ownership		
Charlotte	\$16,677.41	1.817%
Homewood	\$1,625.82	0.177%
Monaghan	\$291.89	0.032%
Walkerfield	\$2,349.57	0.256%
Weller	\$14,197.37	1.547%
Joint ownership	\$35,142.05	3.83%
Privately owned		
Albertus	\$8,081.23	0.880%
Charlotte	\$103,784.16	11.307%
Gilmour	\$65,391.30	7.124%
Gordon	\$59,541.14	6.487%
Homewood	\$129,926.37	14.155%
Monaghan	\$53,982.63	5.881%
Walkerfield	\$192,858.13	21.012%
Weller	\$135,562.27	14.769%
Privately owned	\$749,127.22	81.62%
Total Value of of All Trees:	\$917,855.66	

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Tree Value Based on CTLA Approach on Private Land

Table - 7a. Tree Value based on CTLA approach on private land

Street	Tree Value	Proportion of Total Value of Private Trees
Albertus	\$8,081.23	1.079%
Charlotte	\$103,784.16	13.854%
Gilmour	\$65,391.30	8.729%
Gordon	\$59,541.14	7.948%
Homewood	\$129,926.37	17.344%
Monaghan	\$53,982.63	7.206%
Walkerfield	\$192,858.13	25.744%
Weller	\$135,562.27	18.096%
Privately owned	\$749,127.22	100.00%
Total Value of of All Trees:	\$749,127.22	

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Tree Value Based on CTLA Approach - City and Jointly Owned Trees

Table - 7b. Tree Value based on CTLA approach for city and jointly owned trees

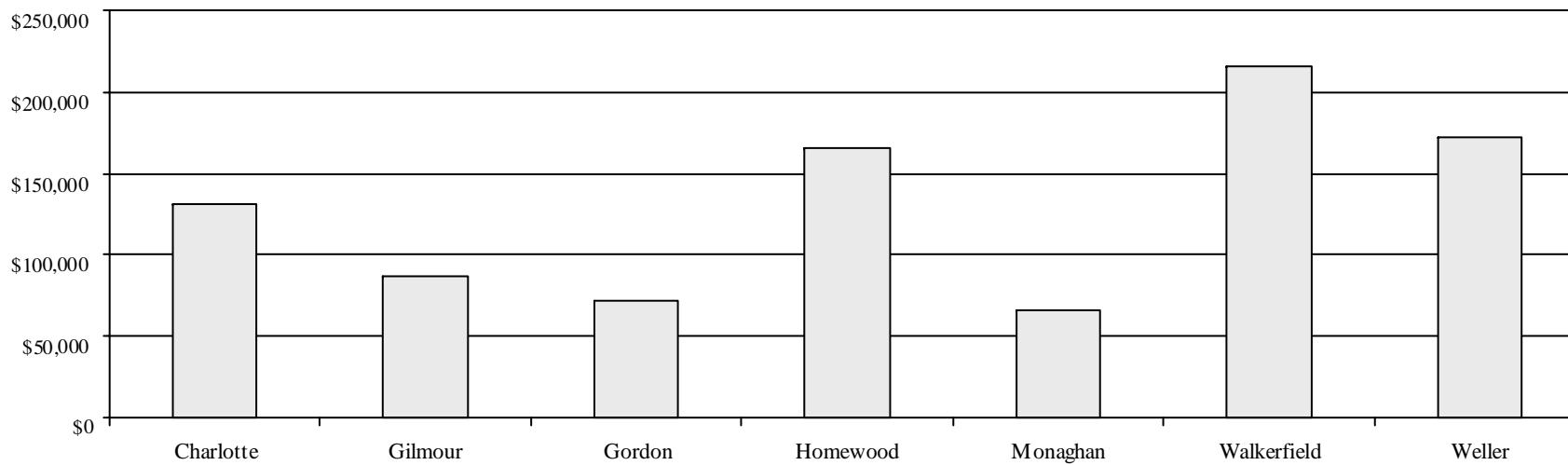
Street	Tree Value	Proportion of Total Value of Public/Joint Trees
Albertus	\$368	0.2%
Charlotte	\$11,217	6.6%
Gilmour	\$20,826	12.3%
Gordon	\$12,666	7.5%
Homewood	\$33,727	20.0%
Monaghan	\$11,489	6.8%
Walkerfield	\$21,047	12.5%
Weller	\$22,247	13.2%
City owned	\$133,586	79.2%
Charlotte	\$16,677	9.9%
Homewood	\$1,626	1.0%
Monaghan	\$292	0.2%
Walkerfield	\$2,350	1.4%
Weller	\$14,197	8.4%
Joint ownership	\$35,142	20.8%
Total Value of of All Trees	\$168,728	

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Value of Community Trees by Streets Based on CTLA Approach

Figure - 25. Value of trees summarized by streets (more than \$ 50 000)



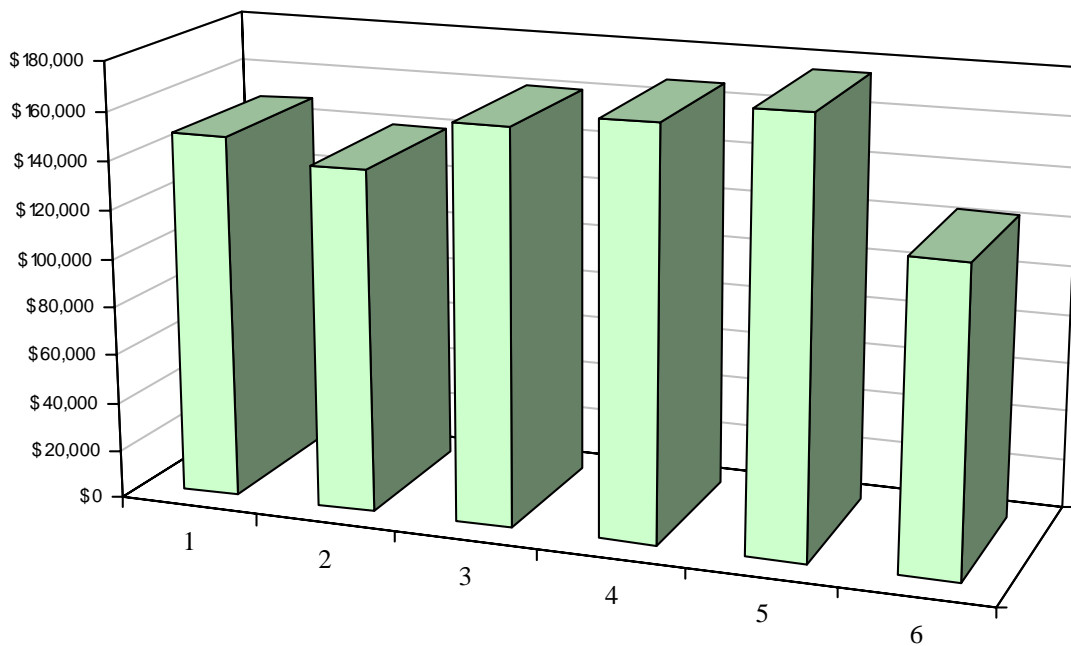
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Value of Trees by Diameter Classes Based on CTLA Approach

The value of a single tree is related to its size, condition, location and species rating. A few trees left on a lot that is being developed may add thousands of dollars to the site's property value. Furthermore, a healthy tree in an urban area may be worth twenty-five times its rural counterpart (Moll 1989). The value of trees, by diameter class, is shown in Figure 26. The cumulative values of all species represented in the community have been estimated based on the CTLA approach, and shown in Table 8. The ten species with maximum cumulative values are shown in Figure 27. Similarly, values of all genera represented in the community are shown in Figure 28 and Table 9.

Figure - 26. Value of trees in each diameter class based on CTLA approach





Value of Species Based on CTLA Approach (sorted by species)

Figure - 27. Top ten species values based on CTLA approach

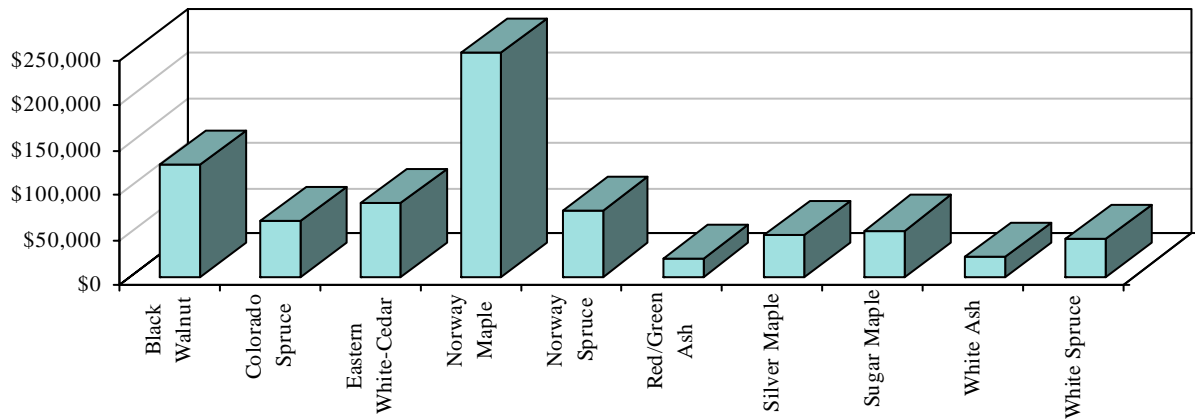


Table - 8. Species values based on CTLA approach sorted by species

Common name	Species Value	Proportion of Total Value of Community Trees
Alder Buckthorn	\$7,213	0.79%
American Elm	\$3,600	0.39%
American Mountainash	\$1,317	0.14%
Ash sp.	\$1,971	0.21%
Austrian Pine	\$7,456	0.81%
Balsam Fir	\$6,451	0.70%
Basswood	\$6,025	0.66%
Bigleaf Linden	\$4,816	0.52%
Birch sp.	\$562	0.06%
Black Ash	\$514	0.06%
Black Locust	\$5,448	0.59%
Black Maple	\$780	0.08%
Black Mulberry	\$792	0.09%
Black Walnut	\$123,248	13.43%
Canada Plum	\$170	0.02%
Chinese Juniper	\$463	0.05%
Colorado Spruce	\$61,485	6.70%

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Table - 8. Species values based on CTLA approach sorted by species

Common name	Species Value	Proportion of Total Value of Community Trees
Common Pear	\$876	0.10%
Common Yew	\$505	0.06%
Crabapple(s)	\$4,029	0.44%
Douglas Fir	\$3,850	0.42%
Eastern White-Cedar	\$81,305	8.86%
Euopean Larch	\$263	0.03%
European Mountin Ash	\$629	0.07%
European Yew	\$811	0.09%
French Lilac	\$2,600	0.28%
Golden Weeping Willow	\$80	0.01%
Honey Locust	\$5,185	0.56%
Ironwood	\$2,893	0.32%
Japanese Crabapple(s)	\$2,324	0.25%
Japanese Maple	\$264	0.03%
Juniperus sp.	\$4,664	0.51%
Kentucky Coffetree	\$504	0.05%
Little-Leaf Linden	\$12,382	1.35%
Magnolia sp.	\$151	0.02%
Manitoba Maple	\$2,543	0.28%
Mugo Pine	\$314	0.03%
Norway Maple	\$247,918	27.01%
Norway Spruce	\$73,196	7.97%
Oriental Cedar	\$4,587	0.50%
Oriental Cherry	\$2,332	0.25%
Paper Birch	\$10,135	1.10%
Peach	\$1,556	0.17%
Pignut Hickory	\$10,824	1.18%
Red Cedar	\$876	0.10%
Red Oak	\$331	0.04%
Red Pine	\$1,072	0.12%
Red/Green Ash	\$19,351	2.11%
Rock Elm	\$185	0.02%
Russian Olive	\$449	0.05%
Scot's Pine	\$4,535	0.49%
Serviceberry	\$463	0.05%

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Table - 8. Species values based on CTLA approach sorted by species

Common name	Species Value	Proportion of Total Value of Community Trees
Siberian Elm	\$381	0.04%
Silver Maple	\$45,666	4.98%
Sour Cherry	\$1,718	0.19%
Sugar Maple	\$51,625	5.62%
Sumac	\$325	0.04%
Tamarack	\$3,260	0.36%
White Ash	\$21,291	2.32%
White Mulberry	\$2,177	0.24%
White Pine	\$13,010	1.42%
White Spruce	\$41,871	4.56%
Yew sp.	\$240	0.03%
Total Value of Trees:	\$917,856	

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Value of Species Based on CTLA Approach (sorted by value)

Table - 8a. Species values based on CTLA approach sorted by value

Common name	Species Value	Proportion of Total Value of Community Trees
Norway Maple	\$247,918	27.01%
Black Walnut	\$123,248	13.43%
Eastern White-Cedar	\$81,305	8.86%
Norway Spruce	\$73,196	7.97%
Colorado Spruce	\$61,485	6.70%
Sugar Maple	\$51,625	5.62%
Silver Maple	\$45,666	4.98%
White Spruce	\$41,871	4.56%
White Ash	\$21,291	2.32%
Red/Green Ash	\$19,351	2.11%
White Pine	\$13,010	1.42%
Little-Leaf Linden	\$12,382	1.35%
Pignut Hickory	\$10,824	1.18%
Paper Birch	\$10,135	1.10%
Austrian Pine	\$7,456	0.81%
Alder Buckthorn	\$7,213	0.79%
Balsam Fir	\$6,451	0.70%
Basswood	\$6,025	0.66%
Black Locust	\$5,448	0.59%
Honey Locust	\$5,185	0.56%
Bigleaf Linden	\$4,816	0.52%
Juniperus sp.	\$4,664	0.51%
Oriental Cedar	\$4,587	0.50%
Scot's Pine	\$4,535	0.49%
Crabapple(s)	\$4,029	0.44%
Douglas Fir	\$3,850	0.42%
American Elm	\$3,600	0.39%
Tamarack	\$3,260	0.36%
Ironwood	\$2,893	0.32%
French Lilac	\$2,600	0.28%
Manitoba Maple	\$2,543	0.28%
Oriental Cherry	\$2,332	0.25%
Japanese Crabapple(s)	\$2,324	0.25%

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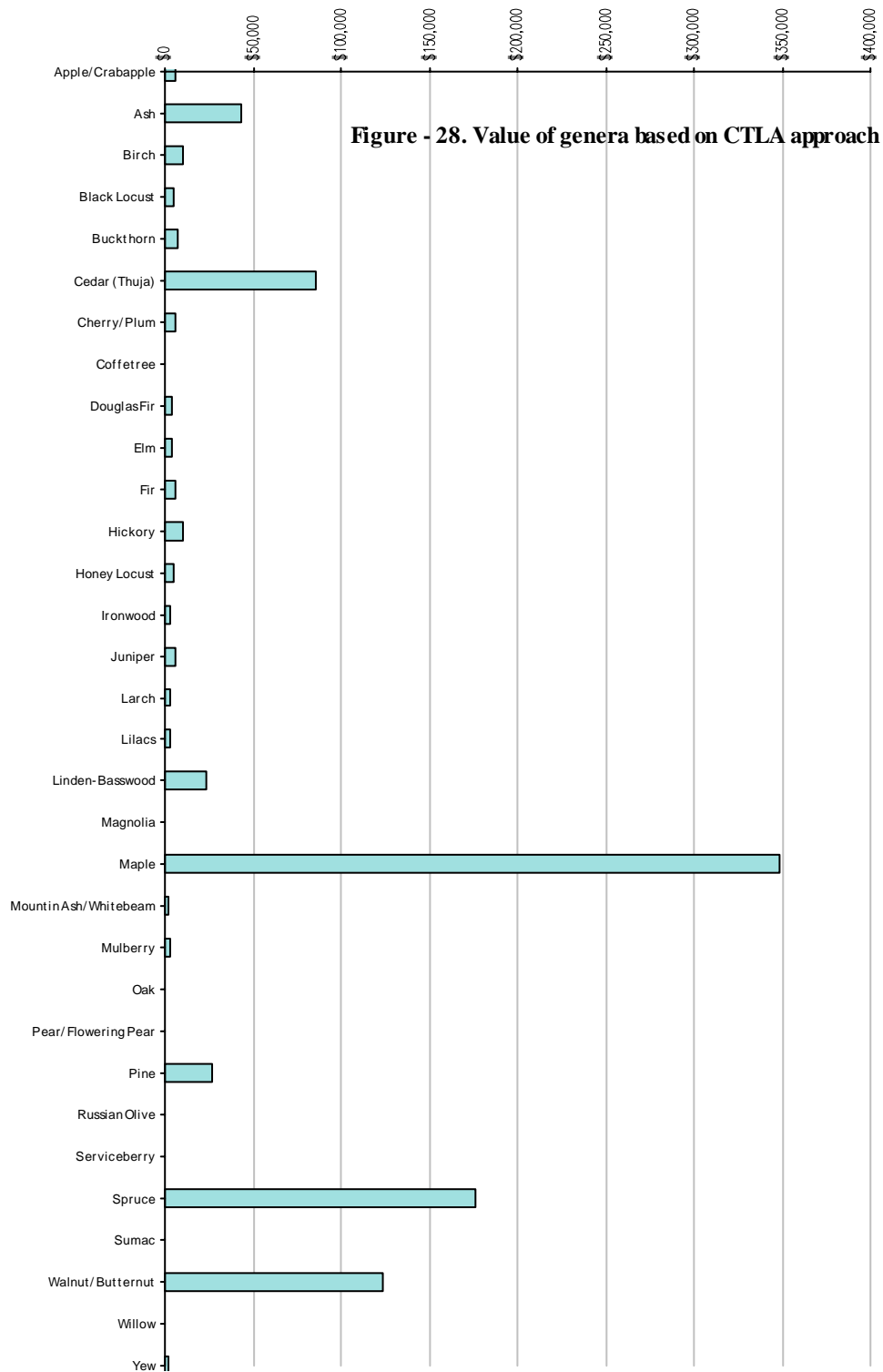
Table - 8a. Species values based on CTLA approach sorted by value

Common name	Species Value	Proportion of Total Value of Community Trees
White Mulberry	\$2,177	0.24%
Ash sp.	\$1,971	0.21%
Sour Cherry	\$1,718	0.19%
Peach	\$1,556	0.17%
American Mountainash	\$1,317	0.14%
Red Pine	\$1,072	0.12%
Common Pear	\$876	0.10%
Red Cedar	\$876	0.10%
European Yew	\$811	0.09%
Black Mulberry	\$792	0.09%
Black Maple	\$780	0.08%
European Mountin Ash	\$629	0.07%
Birch sp.	\$562	0.06%
Black Ash	\$514	0.06%
Common Yew	\$505	0.06%
Kentucky Coffetree	\$504	0.05%
Chinese Juniper	\$463	0.05%
Serviceberry	\$463	0.05%
Russian Olive	\$449	0.05%
Siberian Elm	\$381	0.04%
Red Oak	\$331	0.04%
Sumac	\$325	0.04%
Mugo Pine	\$314	0.03%
Japanese Maple	\$264	0.03%
Euopean Larch	\$263	0.03%
Yew sp.	\$240	0.03%
Rock Elm	\$185	0.02%
Canada Plum	\$170	0.02%
Magnolia sp.	\$151	0.02%
Golden Weeping Willow	\$80	0.01%
Total Value of Trees:	\$917,856	

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Value of Genera Based on CTLA Approach



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Table - 9. Genera value based on CTLA Approach

Genus	Genera Value	Proportion of Total Value of Community Trees
<i>Apple/Craba</i>	\$6,352	0.69%
<i>Ash</i>	\$43,127	4.70%
<i>Birch</i>	\$10,697	1.17%
<i>Black Locust</i>	\$5,448	0.59%
<i>Buckthorn</i>	\$7,213	0.79%
<i>Cedar (Thuja)</i>	\$85,892	9.36%
<i>Cherry/Plum</i>	\$5,775	0.63%
<i>Coffetree</i>	\$504	0.05%
<i>Douglas Fir</i>	\$3,850	0.42%
<i>Elm</i>	\$4,167	0.45%
<i>Fir</i>	\$6,451	0.70%
<i>Hickory</i>	\$10,824	1.18%
<i>Honey Locust</i>	\$5,185	0.56%
<i>Ironwood</i>	\$2,893	0.32%
<i>Juniper</i>	\$6,003	0.65%
<i>Larch</i>	\$3,524	0.38%
<i>Lilacs</i>	\$2,600	0.28%
<i>Linden-Bass</i>	\$23,223	2.53%
<i>Magnolia</i>	\$151	0.02%
<i>Maple</i>	\$348,795	38.00%
<i>Mountin Ash/</i>	\$1,946	0.21%
<i>Mulberry</i>	\$2,969	0.32%
<i>Oak</i>	\$331	0.04%
<i>Pear/Floweri</i>	\$876	0.10%
<i>Pine</i>	\$26,387	2.87%
<i>Russian Oliv</i>	\$449	0.05%
<i>Serviceberry</i>	\$463	0.05%
<i>Spruce</i>	\$176,552	19.24%
<i>Sumac</i>	\$325	0.04%
<i>Walnut/Butte</i>	\$123,248	13.43%
<i>Willow</i>	\$80	0.01%
<i>Yew</i>	\$1,557	0.17%
Total Value:	\$917,856	

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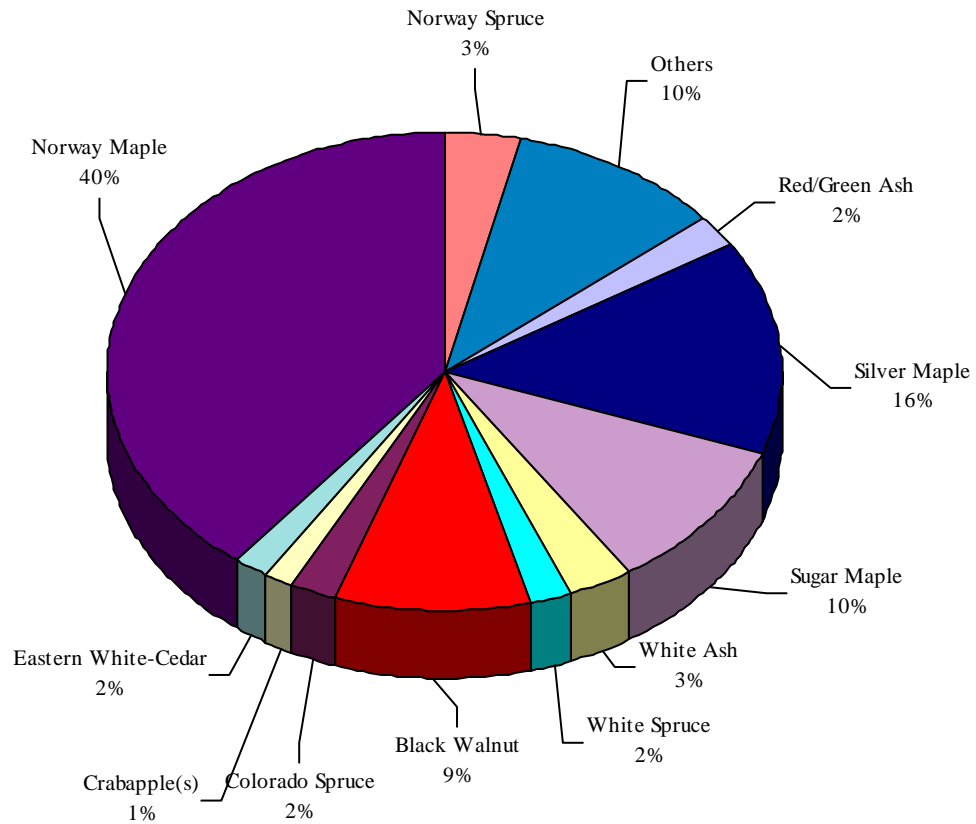
Basal and Leaf Area

Benefits derived from an urban forest are directly related to the canopy or, more specifically, the leaf area. Leaf area in both urban and surrounding rural areas is critical for evapotranspiration, intercepting atmospheric deposition, biogenic volatile organic emissions, light interception and other ecosystem processes (Nowak 1996). Knowing leaf and basal area helps you to target urban forest management in order to increase the canopy cover. For example, urban forests comprised of numerous small trees can have less leaf area than one with fewer but larger trees. Reports on species, leaf area and basal area, along with reports (Table 10, 11, 12, 13 and Figure 29 and 30) on species/genera distribution can help you to target urban forest planning and management for increasing canopy cover. The increase of canopy cover or leaf area does not necessarily mean planting more trees; it might be directed toward protecting larger trees. This program provides you with reports on basal and leaf area by species and management unit. Both leaf and basal area are shown in square meters.



Basal Area

Figure 29. Proportion of basal area for species that contribute to the total basal area with more than one (>1%) percent.



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Species Basal Area

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Table - 10. Species basal area.

Species	Number of trees	Basal Area (square m)	Proportion in total basal area
Alder Buckthorn	31	0.36	0.42%
American Elm	7	0.45	0.52%
American Mountainash	3	0.04	0.05%
Ash sp.	4	0.10	0.12%
Austrian Pine	8	0.36	0.41%
Balsam Fir	8	0.21	0.24%
Basswood	14	0.21	0.24%
Bigleaf Linden	2	0.22	0.25%
Birch sp.	1	0.03	0.03%
Black Ash	2	0.18	0.20%
Black Locust	6	0.63	0.73%
Black Maple	2	0.23	0.26%
Black Mulberry	1	0.02	0.02%
Black Walnut	39	8.13	9.35%
Canada Plum	1	0.01	0.01%
Chinese Juniper	1	0.02	0.02%
Colorado Spruce	25	2.13	2.45%
Common Pear	1	0.02	0.02%
Common Yew	2	0.01	0.01%
Crabapple(s)	20	1.08	1.24%
Douglas Fir	2	0.20	0.23%
Eastern White-Cedar	157	1.52	1.75%
European Larch	1	0.01	0.01%
European Mountin Ash	6	0.16	0.19%
European Yew	3	0.03	0.04%
French Lilac	17	0.14	0.16%
Golden Weeping Willow	1	0.52	0.59%
Honey Locust	4	0.45	0.52%
Ironwood	2	0.11	0.13%
Japanese Crabapple(s)	6	0.10	0.11%
Japanese Maple	1	0.01	0.01%
Juniperus sp.	8	0.21	0.24%
Kentucky Coffetree	1	0.01	0.01%

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Table - 10. Species basal area.

Species	Number of trees	Basal Area (square m)	Proportion in total basal area
Little-Leaf Linden	4	0.85	0.98%
Magnolia sp.	2	0.00	0.00%
Manitoba Maple	5	0.18	0.20%
Mugo Pine	1	0.01	0.01%
Norway Maple	206	34.25	39.40%
Norway Spruce	22	3.02	3.48%
Oriental Cedar	11	0.14	0.16%
Oriental Cherry	7	0.16	0.19%
Paper Birch	14	0.48	0.55%
Peach	5	0.06	0.07%
Pignut Hickory	2	0.65	0.75%
Red Cedar	1	0.02	0.03%
Red Oak	1	0.00	0.00%
Red Pine	1	0.05	0.06%
Red/Green Ash	20	1.79	2.06%
Rock Elm	1	0.01	0.01%
Russian Olive	2	0.06	0.07%
Scot's Pine	5	0.43	0.50%
Serviceberry	1	0.01	0.01%
Siberian Elm	3	0.10	0.12%
Silver Maple	23	12.74	14.66%
Sour Cherry	2	0.05	0.06%
Sugar Maple	31	8.86	10.19%
Sumac	2	0.01	0.01%
Tamarack	2	0.29	0.33%
White Ash	31	2.68	3.08%
White Mulberry	4	0.06	0.07%
White Pine	8	0.43	0.50%
White Spruce	23	1.63	1.88%
Yew sp.	2	0.02	0.02%
Total:	829	86.92	



Basal and Leaf Area

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Table 11. Species Basal and Leaf Area.

Species	Basal Area (square m)	% Basal Area	Leaf Area (square m)	% Leaf Area
<i>Abies balsamea</i> (Balsam Fir)	0.21	0.242%	666.71	0.06%
<i>Acer negundo</i> (Manitoba Maple)	0.18	0.204%	548.32	0.05%
<i>Acer palmatum</i> (Japanese Maple)	0.01	0.006%	62.07	0.01%
<i>Acer platanoides</i> (Norway Maple)	34.25	39.398%	206,184.16	19.59%
<i>Acer saccharinum</i> (Silver Maple)	12.74	14.661%	572,932.58	54.43%
<i>Acer saccharum</i> (Sugar Maple)	8.86	10.193%	84,301.56	8.01%
<i>Acer saccharum ssp nigrum</i> (Black Maple)	0.23	0.259%	557.87	0.05%
<i>Amelanchier canadensis</i> (Serviceberry)	0.01	0.009%	49.00	0.00%
<i>Betula papyrifera</i> (Paper Birch)	0.48	0.555%	1,602.35	0.15%
<i>Betula sp.</i> (Birch sp.)	0.03	0.033%	101.51	0.01%
<i>Carya glabra</i> (Pignut Hickory)	0.65	0.751%	3,186.10	0.30%
<i>Elaeagnus angustifolia</i> (Russian Olive)	0.06	0.067%	212.09	0.02%
<i>Fraxinus americana</i> (White Ash)	2.68	3.078%	21,478.59	2.04%
<i>Fraxinus nigra</i> (Black Ash)	0.18	0.204%	434.30	0.04%
<i>Fraxinus pennsylvanica</i> (Red/Green Ash)	1.79	2.062%	8,756.38	0.83%
<i>Fraxinus sp.</i> (Ash sp.)	0.10	0.115%	359.60	0.03%
<i>Gleditsia triacanthos</i> (Honey Locust)	0.45	0.517%	588.67	0.06%
<i>Gymnocladus dioicus</i> (Kentucky Coffetree)	0.01	0.010%	71.60	0.01%
<i>Juglans nigra</i> (Black Walnut)	8.13	9.350%	98,619.22	9.37%
<i>Juniperus chinensis</i> (Chinese Juniper)	0.02	0.018%	67.13	0.01%
<i>Juniperus sp.</i> (Juniperus sp.)	0.21	0.236%	602.90	0.06%
<i>Juniperus virginiana</i> (Red Cedar)	0.02	0.028%	82.41	0.01%
<i>Larix decidua</i> (European Larch)	0.01	0.007%	48.63	0.00%
<i>Larix laricina</i> (Tamarack)	0.29	0.333%	657.10	0.06%
<i>Magnolia sp.</i> (Magnolia sp.)	0.00	0.005%	75.87	0.01%
<i>Malus hybrids</i> (Crabapple(s))	1.08	1.240%	2,846.65	0.27%

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Table 11. Species Basal and Leaf Area.

Species	Basal Area (square m)	% Basal Area	Leaf Area (square m)	% Leaf Area
<i>Malus x floribunda</i> (Japanese Crabapple(s))	0.10	0.114%	504.44	0.05%
<i>Morus alba</i> (White Mulberry)	0.06	0.071%	222.21	0.02%
<i>Morus nigra</i> (Black Mulberry)	0.02	0.018%	67.13	0.01%
<i>Ostrya virginiana</i> (Ironwood)	0.11	0.127%	280.36	0.03%
<i>Picea abies</i> (Norway Spruce)	3.02	3.475%	8,738.16	0.83%
<i>Picea glauca</i> (White Spruce)	1.63	1.876%	3,941.69	0.37%
<i>Picea pungens</i> (Colorado Spruce)	2.13	2.451%	6,194.80	0.59%
<i>Pinus mugo</i> (Mugo Pine)	0.01	0.006%	47.23	0.00%
<i>Pinus nigra</i> (Austrian Pine)	0.36	0.409%	849.55	0.08%
<i>Pinus resinosa</i> (Red Pine)	0.05	0.061%	135.61	0.01%
<i>Pinus strobus</i> (White Pine)	0.43	0.495%	1,618.89	0.15%
<i>Pinus sylvestris</i> (Scot's Pine)	0.43	0.498%	777.41	0.07%
<i>Prunus nigra</i> (Canada Plum)	0.01	0.006%	47.23	0.00%
<i>Prunus persica</i> (Peach)	0.06	0.066%	202.56	0.02%
<i>Prunus serrulata</i> (Oriental Cherry)	0.16	0.190%	443.39	0.04%
<i>Prunus vulgaris</i> (Sour Cherry)	0.05	0.063%	110.46	0.01%
<i>Pseudotsuga menziesii</i> (Douglas Fir)	0.20	0.230%	386.86	0.04%
<i>Pyrus communis</i> (Common Pear)	0.02	0.020%	74.10	0.01%
<i>Quercus rubra</i> (Red Oak)	0.00	0.004%	48.27	0.00%
<i>Rhamnus sp.</i> (Alder Buckthorn)	0.36	0.415%	1,152.87	0.11%
<i>Rhus typhina</i> (Sumac)	0.01	0.009%	89.08	0.01%
<i>Robinia pseudoacacia</i> (Black Locust)	0.63	0.729%	2,050.49	0.19%
<i>Salix babylonica</i> (Golden Weeping Willow)	0.52	0.593%	1,914.85	0.18%
<i>Sorbus americana</i> (American Mountainash)	0.04	0.048%	192.67	0.02%
<i>Sorbus aucuparia</i> (European Mountin Ash)	0.16	0.187%	328.95	0.03%
<i>Syringa vulgaris</i> (French Lilac)	0.14	0.158%	771.23	0.07%
<i>Taxus baccata</i> (European Yew)	0.03	0.035%	172.50	0.02%
<i>Taxus canadensis</i> (Common Yew)	0.01	0.013%	92.33	0.01%

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Table 11. Species Basal and Leaf Area.

Species	Basal Area (square m)	% Basal Area	Leaf Area (square m)	% Leaf Area
<i>Taxus sp. (Yew sp.)</i>	0.02	0.017%	64.87	0.01%
<i>Thuja occidentalis (Eastern White-Cedar)</i>	1.52	1.746%	8,259.14	0.78%
<i>Thuja orientalis (Oriental Cedar)</i>	0.14	0.165%	682.35	0.06%
<i>Tilia americana (Basswood)</i>	0.21	0.244%	1,310.01	0.12%
<i>Tilia cordata (Little-Leaf Linden)</i>	0.85	0.982%	3,787.77	0.36%
<i>Tilia platyphyllos (Bigleaf Linden)</i>	0.22	0.253%	939.06	0.09%
<i>Ulmus americana (American Elm)</i>	0.45	0.517%	814.50	0.08%
<i>Ulmus pumila (Siberian Elm)</i>	0.10	0.120%	228.13	0.02%
<i>Ulmus thomasi (Rock Elm)</i>	0.01	0.009%	63.32	0.01%
Total:	86.92		1,052,697.79	



Basal and Leaf Area

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Table 12. Total species basal and leaf area by street

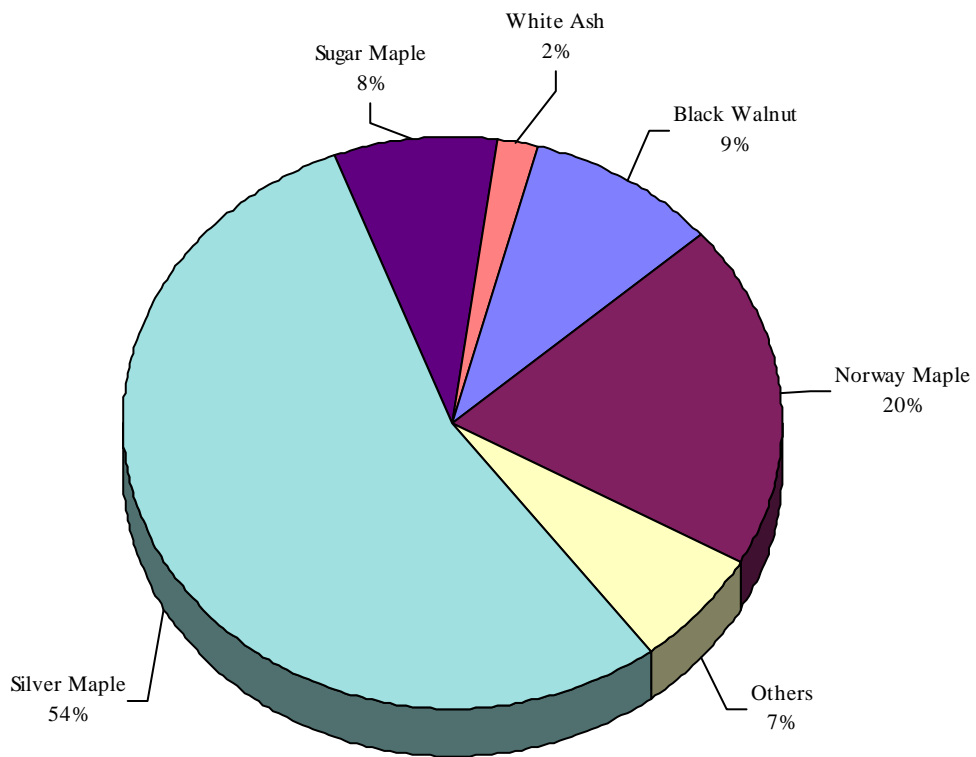
Street Name	Basal Area (square m)	% Basal Area	Leaf Area (square m)	% Leaf Area
Albertus	1.37	1.57%	4,718	0.45%
Charlotte	10.39	11.95%	309,709	29.42%
Gilmour	14.48	16.66%	84,739	8.05%
Gordon	6.26	7.20%	39,598	3.76%
Homewood	17.81	20.49%	409,098	38.86%
Monaghan	7.34	8.45%	45,609	4.33%
Walkerfield	17.13	19.71%	81,714	7.76%
Weller	12.15	13.98%	77,513	7.36%
Total:	86.92		1,052,698	

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Leaf Area

Figure 30. Proportion of leaf area for species that contribute to the canopy with more than one (>1%) percent.





Leaf Area by Species

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Table 13. Species Leaf Area

Species	Number of trees	Leaf Area (square m)	Proportion of total leaf area
Silver Maple	23	572,932.6	54.43%
Norway Maple	206	206,184.2	19.59%
Black Walnut	39	98,619.2	9.37%
Sugar Maple	31	84,301.6	8.01%
White Ash	31	21,478.6	2.04%
Red/Green Ash	20	8,756.4	0.83%
Norway Spruce	22	8,738.2	0.83%
Eastern White-Cedar	157	8,259.1	0.78%
Colorado Spruce	25	6,194.8	0.59%
White Spruce	23	3,941.7	0.37%
Little-Leaf Linden	4	3,787.8	0.36%
Pignut Hickory	2	3,186.1	0.30%
Crabapple(s)	20	2,846.7	0.27%
Black Locust	6	2,050.5	0.19%
Golden Weeping Willow	1	1,914.8	0.18%
White Pine	8	1,618.9	0.15%
Paper Birch	14	1,602.3	0.15%
Basswood	14	1,310.0	0.12%
Alder Buckthorn	31	1,152.9	0.11%
Bigleaf Linden	2	939.1	0.09%
Austrian Pine	8	849.5	0.08%
American Elm	7	814.5	0.08%
Scot's Pine	5	777.4	0.07%
French Lilac	17	771.2	0.07%
Oriental Cedar	11	682.3	0.06%
Balsam Fir	8	666.7	0.06%
Tamarack	2	657.1	0.06%
Juniperus sp.	8	602.9	0.06%
Honey Locust	4	588.7	0.06%
Black Maple	2	557.9	0.05%
Manitoba Maple	5	548.3	0.05%
Japanese Crabapple(s)	6	504.4	0.05%
Oriental Cherry	7	443.4	0.04%

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Table 13. Species Leaf Area

Species	Number of trees	Leaf Area (square m)	Proportion of total leaf area
Black Ash	2	434.3	0.04%
Douglas Fir	2	386.9	0.04%
Ash sp.	4	359.6	0.03%
European Mountin Ash	6	328.9	0.03%
Ironwood	2	280.4	0.03%
Siberian Elm	3	228.1	0.02%
White Mulberry	4	222.2	0.02%
Russian Olive	2	212.1	0.02%
Peach	5	202.6	0.02%
American Mountainash	3	192.7	0.02%
European Yew	3	172.5	0.02%
Red Pine	1	135.6	0.01%
Sour Cherry	2	110.5	0.01%
Birch sp.	1	101.5	0.01%
Common Yew	2	92.3	0.01%
Sumac	2	89.1	0.01%
Red Cedar	1	82.4	0.01%
Magnolia sp.	2	75.9	0.01%
Common Pear	1	74.1	0.01%
Kentucky Coffetree	1	71.6	0.01%
Black Mulberry	1	67.1	0.01%
Chinese Juniper	1	67.1	0.01%
Yew sp.	2	64.9	0.01%
Rock Elm	1	63.3	0.01%
Japanese Maple	1	62.1	0.01%
Serviceberry	1	49.0	0.00%
Euopean Larch	1	48.6	0.00%
Red Oak	1	48.3	0.00%
Canada Plum	1	47.2	0.00%
Mugo Pine	1	47.2	0.00%
Total:	829	1,052,697.8	

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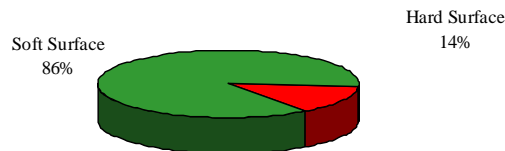


Plantable Spots

Hard surfaces, such as buildings, parking lots, streets, and paved paths dominate the urban landscape. Hard surfaces, such as buildings, parking lots, streets, and paved paths dominate the urban landscape. They have a great impact on urban climate and water attenuation. Hard surfaces are the cause of a phenomenon known as the urban heat island effect. This involves hard surfaces which absorb and re-radiate heat into the ambient atmosphere, raising the temperature. As a result, average temperatures in urban areas are invariably a few degrees higher than in the surrounding landscape. Heat islands are not only characteristic of large cities, but also of smaller communities.

Paved areas and buildings also have an impact on water attenuation. Even in regions with adequate annual precipitation, cities are generally drier than the surrounding landscape, as almost all the water flows towards sewage and storm drains. This impacts the moisture regime of urban soils and stresses tree growth. Soft surfaces (e.g. grass, flower and vegetable gardens, unpaved ground, mulch, etc.), which allow water to infiltrate and percolate into the soil, are a much better substrate for tree growth. A high proportion of hard surfaces devalue the community environment. The proportion of hard to soft surfaces in the community is shown in Figure 31.

Figure - 31. Proportion of hard and soft surfaces under tree canopies.



Within the paved urban environment there are still many spaces and city plots that can successfully support tree growth. For example, an average forest cover of 30 percent, which is typical for American cities, could increase up to 60 percent (Moll, 1989). This opportunity to increase the number of trees in urban settings could be realized by planting on many different types of land plots found in the city. It has been suggested in the US that enough room for planting more trees can be found in city parks, school yards, cemeteries, parking lots, industrial yards, barren land along highways, residential land, etc. (Moll, 1989). For example, it has been estimated that there are 1200 million “tree spaces” available around homes and businesses within American communities. Filling these spaces with mature trees could result in a saving of 500 trillion kilowatt-hours of energy and reduce the amount of carbon dioxide by as much as 18 million tons each year in the US. In addition, there are 60 million open spaces along public roadways that need trees and millions of others in parks and greenways in the US (Sampson, 1989).

Residential areas have the greatest opportunity to increase their crown cover and improve the quality of life. Not only climate and hydrology but, also wildlife, air quality and human well being can be significantly improved by planting more trees in urban areas. More trees can be planted in residential areas on lots by reducing the area of lawns, open land, paved paths and parking lots. However, just planting more trees is not the answer. Prior tree planting biology and site characteristics have to be considered during tree planting, characteristics of planting sites and size of fully grown tree should be kept on mind.

The available planting spots are listed in Table -14. and Table -15. The number of trees that could be planted classified by three height classes is shown in Figure - 32 and Table - 16.



Plantable Spots and Proportion of Hard and Soft Surface Areas in the Community

Table - 14. Location and number of plantable spots, and proportion of hard and soft surfaces per property

Street name	Lot No	Hard Surface %	Soft Surface %	Location of Plantable Spot	Height Class	Number of Plantable Spots
Albertus	375	0%	100%	<i>front yard</i>	2	1
				<i>front yard</i>	2	1
				<i>Total Number of Plantable Spots per Lot No: 375</i>		
Charlotte	602	0%	100%	<i>back yard</i>	2	1
				<i>Total Number of Plantable Spots per Lot No: 602</i>		
Charlotte	612	8%	92%	<i>back yard</i>	2	1
				<i>Total Number of Plantable Spots per Lot No: 612</i>		
Charlotte	620	10%	90%	<i>front yard</i>	2	1
				<i>Total Number of Plantable Spots per Lot No: 620</i>		
Charlotte	624	0%	100%	<i>back yard</i>	2	1
				<i>Total Number of Plantable Spots per Lot No: 624</i>		
Charlotte	626	0%	100%	<i>front yard</i>	2	1
				<i>back yard</i>	2	1
				<i>Total Number of Plantable Spots per Lot No: 626</i>		
Charlotte	652	0%	100%	<i>back yard</i>	2	1
				<i>front yard</i>	2	1
				<i>Total Number of Plantable Spots per Lot No: 652</i>		

Table - 14. Location and number of plantable spots, and proportion of hard and soft surfaces per property

Street name	Lot No	Hard Surface %	Soft Surface %	Location of Plantable Spot	Height Class	Number of Plantable Spots
Charlotte	658	0%	100%	<i>front yard</i>	2	1
Total Number of Plantable Spots per Lot No: 658						1
Charlotte	664	0%	100%	<i>front yard</i>	2	1
				<i>back yard</i>	2	1
Total Number of Plantable Spots per Lot No: 664						2
Gilmour	608	0%	100%	<i>back yard</i>	2	1
				<i>back yard</i>	2	1
Total Number of Plantable Spots per Lot No: 608						2
Gilmour	609	0%	100%	<i>back yard</i>	2	1
Total Number of Plantable Spots per Lot No: 609						1
Gilmour	620	0%	100%	<i>front yard</i>	2	1
Total Number of Plantable Spots per Lot No: 620						1
Gilmour	626	0%	100%	<i>front yard</i>	2	1
				<i>front yard</i>	2	1
				<i>back yard</i>	2	1
Total Number of Plantable Spots per Lot No: 626						3
Gilmour	628	0%	100%	<i>back yard</i>	2	1
Total Number of Plantable Spots per Lot No: 628						1
Gilmour	633	0%	100%	<i>side yard</i>	2	1

Table - 14. Location and number of plantable spots, and proportion of hard and soft surfaces per property

Street name	Lot No	Hard Surface %	Soft Surface %	Location of Plantable Spot	Height Class	Number of Plantable Spots
<i>Total Number of Plantable Spots per Lot No: 633</i>						1
Gilmour	640	0%	100%			
				<i>back yard</i>	2	1
				<i>back yard</i>	2	1
				<i>front yard</i>	2	1
<i>Total Number of Plantable Spots per Lot No: 640</i>						3
Gilmour	641	0%	100%			
				<i>front yard</i>	2	1
				<i>front yard</i>	2	1
<i>Total Number of Plantable Spots per Lot No: 641</i>						2
Gilmour	651	0%	100%			
				<i>back yard</i>	2	1
				<i>side yard</i>	2	1
<i>Total Number of Plantable Spots per Lot No: 651</i>						2
Gilmour	657	0%	100%			
				<i>front yard</i>	2	1
				<i>back yard</i>	2	1
				<i>back yard</i>	2	1
<i>Total Number of Plantable Spots per Lot No: 657</i>						3
Gordon	1328	0%	100%			
				<i>front yard</i>	2	1
				<i>back yard</i>	2	1
<i>Total Number of Plantable Spots per Lot No: 1328</i>						2
Homewood	601	0%	100%			
				<i>front yard</i>	2	1
<i>Total Number of Plantable Spots per Lot No: 601</i>						1
Homewood	615	0%	100%			
				<i>back yard</i>	2	1

Table - 14. Location and number of plantable spots, and proportion of hard and soft surfaces per property

Street name	Lot No	Hard Surface %	Soft Surface %	Location of Plantable Spot	Height Class	Number of Plantable Spots
				<i>front yard</i>	2	1
				<i>back yard</i>	2	1
				Total Number of Plantable Spots per Lot No: 615		3
Homewood	619	0%	100%			
				<i>front yard</i>	2	1
				<i>front yard</i>	2	1
				Total Number of Plantable Spots per Lot No: 619		2
Homewood	623	0%	100%			
				<i>back yard</i>	2	1
				<i>front yard</i>	2	1
				Total Number of Plantable Spots per Lot No: 623		2
Homewood	627	0%	100%			
				<i>front yard</i>	2	1
				<i>front yard</i>	2	1
				<i>back yard</i>	2	1
				Total Number of Plantable Spots per Lot No: 627		3
Homewood	628	0%	100%			
				<i>front yard</i>	2	1
				Total Number of Plantable Spots per Lot No: 628		1
Homewood	629	0%	100%			
				<i>front yard</i>	2	1
				Total Number of Plantable Spots per Lot No: 629		1
Homewood	636	0%	100%			
				<i>front yard</i>	2	1
				<i>front yard</i>	2	1
				Total Number of Plantable Spots per Lot No: 636		2
Monaghan	1445	0%	100%			
				<i>back yard</i>	2	1

Table - 14. Location and number of plantable spots, and proportion of hard and soft surfaces per property

Street name	Lot No	Hard Surface %	Soft Surface %	Location of Plantable Spot	Height Class	Number of Plantable Spots
				<i>front yard</i>	2	1
				<i>side yard</i>	2	1
				<i>back yard</i>	2	1
				<i>back yard</i>	2	1
				<i>back yard</i>	2	1
				<i>back yard</i>	2	1
				<i>back yard</i>	2	1
				<i>back yard</i>	2	1
				<i>back yard</i>	2	1
						9
	<i>Total Number of Plantable Spots per Lot No: 1445</i>					
Walkerfield	610	0%	100%			
				<i>back yard</i>	2	1
						1
	<i>Total Number of Plantable Spots per Lot No: 610</i>					
Walkerfield	612	0%	100%			
				<i>front yard</i>	2	1
				<i>back yard</i>	2	1
						2
	<i>Total Number of Plantable Spots per Lot No: 612</i>					
Walkerfield	615	0%	100%			
				<i>back yard</i>	2	1
						1
	<i>Total Number of Plantable Spots per Lot No: 615</i>					
Walkerfield	619	0%	100%			
				<i>back yard</i>	2	1
						1
	<i>Total Number of Plantable Spots per Lot No: 619</i>					
Walkerfield	639	0%	100%			
				<i>back yard</i>	2	1
						1
	<i>Total Number of Plantable Spots per Lot No: 639</i>					
Walkerfield	645	0%	100%			
				<i>front yard</i>	2	1
				<i>front yard</i>	2	1
				<i>back yard</i>	2	1
				<i>front yard</i>	2	1

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Table - 14. Location and number of plantable spots, and proportion of hard and soft surfaces per property

Street name	Lot No	Hard Surface %	Soft Surface %	Location of Plantable Spot	Height Class	Number of Plantable Spots
<i>Total Number of Plantable Spots per Lot No: 645</i>						4
Walkerfield	651	0%	100%			
				<i>back yard</i>	2	1
				<i>back yard</i>	2	1
<i>Total Number of Plantable Spots per Lot No: 651</i>						2
Walkerfield	661	0%	100%			
				<i>back yard</i>	2	1
<i>Total Number of Plantable Spots per Lot No: 661</i>						1
Walkerfield	665	0%	100%			
				<i>street tree</i>	2	1
				<i>side yard</i>	2	1
<i>Total Number of Plantable Spots per Lot No: 665</i>						2
Weller	603	0%	100%			
				<i>front yard</i>	2	1
				<i>back yard</i>	2	1
<i>Total Number of Plantable Spots per Lot No: 603</i>						2
Weller	615	0%	100%			
				<i>front yard</i>	2	1
<i>Total Number of Plantable Spots per Lot No: 615</i>						1
Weller	623	0%	100%			
				<i>back yard</i>	2	1
<i>Total Number of Plantable Spots per Lot No: 623</i>						1
Weller	627	0%	100%			
				<i>front yard</i>	2	1
<i>Total Number of Plantable Spots per Lot No: 627</i>						1
Weller	659	0%	100%			
				<i>front yard</i>	2	1

Table - 14. Location and number of plantable spots, and proportion of hard and soft surfaces per property

Street name	Lot No	Hard Surface %	Soft Surface %	Location of Plantable Spot	Height Class	Number of Plantable Spots
				<i>back yard</i>	3	1
<i>Total Number of Plantable Spots per Lot No: 659</i>						2
Weller	661	0%	100%			
				<i>back yard</i>	3	1
<i>Total Number of Plantable Spots per Lot No: 661</i>						1
Total Number of Plantable Spots in the Community:						81



Number of Plantable Spots by Height Classes per Street

Table - 15. Number of plantable spots by height classes per street

Street name	Height Class	Number of Trees
Albertus	2	2
Total Number of Plantable Spots per Street:		2
Charlotte	2	11
Total Number of Plantable Spots per Street:		11
Gilmour	2	19
Total Number of Plantable Spots per Street:		19
Gordon	2	2
Total Number of Plantable Spots per Street:		2
Homewood	2	15
Total Number of Plantable Spots per Street:		15
Monaghan	2	9
Total Number of Plantable Spots per Street:		9
Walkerfield	2	15
Total Number of Plantable Spots per Street:		15
Weller	2	6
	3	2
Total Number of Plantable Spots per Street:		8
Total Number of Plantable Spots:		81



Total Number of Plantable Spots Grouped by Height Class

Figure - 32. Number of plantable spots by three height class (1 -3)

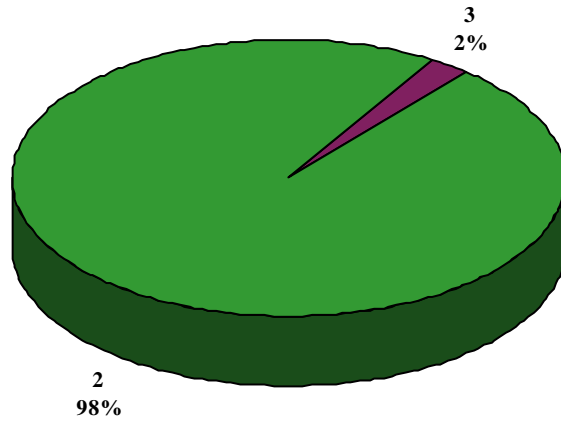


Table - 16. Total number of plantable spots by height class and streets

Height Class	Number of Plantable Spots per Street	Street name
2	2	Albertus
	11	Charlotte
	19	Gilmour
	2	Gordon
	15	Homewood
	9	Monaghan
	15	Walkerfield
	6	Weller
	Number of Trees for Hight Clas 2	79
3	2	Weller
	Number of Trees for Hight Clas 3	2
Total Number of Plantable Spots:	81	



Species List

The survey of trees identified over 50 species of trees and 30 genera. Recorded species are listed in Table -17. Common and scientific names of species and genera are included along with a few additional details such as average species height and diameter and species origin.



Species List

Table -17. List of species that are represented in the community

Common name:	Genus:	Scientific name:	Maximum height (m):	Maximum diameter (cm):	Maximum ag:	Regionally rare	Native range:
Balsam Fir	Fir	<i>Abies balsamea</i>	18	46	150-200	No	Central and Eastern Canada
Manitoba Maple	Maple	<i>Acer negundo</i>	20	75	60	No	Naturalized beyond its natural range.
Japanese Maple	Maple	<i>Acer palmatum</i>	15	30		No	Eastern Asia
Norway Maple	Maple	<i>Acer platanoides</i>	25	335		No	Europe
Silver Maple	Maple	<i>Acer saccharinum</i>	35	100	130	No	North America
Sugar Maple	Maple	<i>Acer saccharum</i>	35	90	200	No	Maritime provinces, Southern Ontario and Quebec.
Black Maple	Maple	<i>Acer saccharum ssp nigrum</i>	35	90	200	No	
Serviceberry	Serviceberry	<i>Amelanchier canadensis</i>	20	20		No	North America
Paper Birch	Birch	<i>Betula papyrifera</i>	25	40	120	No	North America: Across Canada
Birch sp.	Birch	<i>Betula sp.</i>		50		No	
Pignut Hickory	Hickory	<i>Carya glabra</i>	20	50	200	No	Maine to Southern Ontario, South to Florida, Alabama and Mississippi
Russian Olive	Russian Olive	<i>Elaeagnus angustifolia</i>	12	50		No	Europe and Western Asia
White Ash	Ash	<i>Fraxinus americana</i>	30	150	200	No	North-East US
Black Ash	Ash	<i>Fraxinus nigra</i>	21	61		No	Southeastern Ontario, Northeastern USA
Red/Green Ash	Ash	<i>Fraxinus pennsylvanica</i>	25	60		No	Great Lakes-St. Lawrence and Acadian Forest region and the South-Western prairies
Ash sp.	Ash	<i>Fraxinus sp.</i>		70		No	
Honey Locust	Honey Locust	<i>Gleditsia triacanthos</i>	30	90	120	No	North America: Carolinian and surrounding areas
Kentucky Coffetree	Coffetree	<i>Gymnocladus dioicus</i>	25	60	75	Yes	North America: Carolinian and surrounding areas
Black Walnut	Walnut/Butternut	<i>Juglans nigra</i>	30	120	150	No	Southern Ontario, North Eastern US
Chinese Juniper	Juniper	<i>Juniperus chinensis</i>	25			No	China
Juniperus sp.	Juniper	<i>Juniperus sp.</i>		25		No	
Red Cedar	Juniper	<i>Juniperus virginiana</i>	9	20		No	South-Eastern Ontario
Euopean Larch	Larch	<i>Larix decidua</i>	30	100		No	Europe
Tamarack	Larch	<i>Larix laricina</i>	25	40	150	No	Across Canada, North-Eastern US

Table -17. List of species that are represented in the community

Common name:	Genus:	Scientific name:	Maximum height (m):	Maximum diameter (cm):	Maximum ag:	Regionally rare	Native range:
Magnolia sp.	Magnolia	<i>Magnolia sp.</i>		50		No	
Crabapple(s)	Apple/Crabapple	<i>Malus hybrids</i>	8	30		No	
Japanese Crabapple(s)	Apple/Crabapple	<i>Malus x floribunda</i>	8	30		No	
White Mulberry	Mulberry	<i>Morus alba</i>	15			No	China
Black Mulberry	Mulberry	<i>Morus nigra</i>	10			No	
Ironwood	Ironwood	<i>Ostrya virginiana</i>	8	25		No	North-Eastern US
Norway Spruce	Spruce	<i>Picea abies</i>	40	130		No	Europe and Asia
White Spruce	Spruce	<i>Picea glauca</i>	25	60	200	No	North America: Across Canada
Colorado Spruce	Spruce	<i>Picea pungens</i>	30	90	600	No	US Rocky Mountains
Mugo Pine	Pine	<i>Pinus mugo</i>				No	Europe
Austrian Pine	Pine	<i>Pinus nigra</i>	20	30		No	Southern Europe
Red Pine	Pine	<i>Pinus resinosa</i>	25	75	200	No	New Foundland to Pennsylvania and Minnesota; United States
White Pine	Pine	<i>Pinus strobus</i>	30	100	200	No	South-Eastern Canada, North-Eastern US
Scot's Pine	Pine	<i>Pinus sylvestris</i>	30			No	Eurasia
Canada Plum	Cherry/Plum	<i>Prunus nigra</i>	9	25		No	SE Canada, NE U.S.A.
Peach	Cherry/Plum	<i>Prunus persica</i>				No	
Oriental Cherry	Cherry/Plum	<i>Prunus serrulata</i>	10			No	China, Japan
Sour Cherry	Cherry/Plum	<i>Prunus vulgaris</i>				No	
Douglas Fir	Douglas Fir	<i>Pseudotsuga menziesii</i>	60	200	500	No	Western North America
Common Pear	Pear/Flowering Pear	<i>Pyrus communis</i>	15			No	
Red Oak	Oak	<i>Quercus rubra</i>	25	90	150	Yes	Great Lake, St. Lawrence, Carolinian, North-Eastern US
Alder Buckthorn	Buckthorn	<i>Rhamnus sp.</i>		0		No	
Sumac	Sumac	<i>Rhus typhina</i>	6	10	50	No	North shore of Lake Superior east to Nova Scotia
Black Locust	Black Locust	<i>Robinia pseudoacacia</i>	25	60	90	No	Eastern US
Golden Weeping Willow	Willow	<i>Salix babylonica</i>	12			No	
American Mountainash	Mountin Ash/Whitebea	<i>Sorbus americana</i>	8			No	North America
European Mountin Ash	Mountin Ash/Whitebea	<i>Sorbus aucuparia</i>	15			No	Europe

Table -17. List of species that are represented in the community

Common name:	Genus:	Scientific name:	Maximum height (m):	Maximum diameter (cm):	Maximum ag:	Regionally rare	Native range:
French Lilac	Lilacs	<i>Syringa vulgaris</i>				No	Southeast Europe
European Yew	Yew	<i>Taxus baccata</i>				No	
Common Yew	Yew	<i>Taxus canadensis</i>	2			No	
Yew sp.	Yew	<i>Taxus sp.</i>		30		No	
Eastern White-Cedar	Cedar (Thuja)	<i>Thuja occidentalis</i>	15	30	700	No	South-Eastern Canada
Oriental Cedar	Cedar (Thuja)	<i>Thuja orientalis</i>		55		No	
Basswood	Linden-Basswood	<i>Tilia americana</i>	35	100	200	No	Eastern North America
Little-Leaf Linden	Linden-Basswood	<i>Tilia cordata</i>	30	116		No	Europe
Bigleaf Linden	Linden-Basswood	<i>Tilia platyphyllos</i>	30			No	Europe
American Elm	Elm	<i>Ulmus americana</i>	35	175	200	No	Eastern North America
Siberian Elm	Elm	<i>Ulmus pumila</i>	21			No	Northeastern Asia
Rock Elm	Elm	<i>Ulmus thomasi</i>	25	75	175	No	Southern Ontario, Central U.S.A.

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