

# Sheridan College Institute of Technology & Advanced Learning

**Environmental Control**

**FLPL54454 – Environmental Project**

Final Project Report

**ACER - Tree Mapping & Inventory**

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Last but not the least; we are thankful to Sheridan College for providing us the platform to carry out our project.

## 1. Abstract:

Tree Mapping & Inventory was carried out by a team of 7 students, divided into two field groups each of 3 members and 1 person with online work. The field group was assigned the task to undertake tree measurement, labelling, and documenting data in the record sheet. The work location for this project is Sheridan College – Davis Campus Brampton, where 200 trees per group were measured, mapped & labelled. An inventory sheet for trees on the Davis campus was made. Some of the important findings from this project are the highest population density of Japanese tree lilac and silver maple is found at the Sheridan-Davis campus. Silver maple trees absorbed the maximum amount of carbon-dioxide and stored the maximum amount of carbon. The total amount of carbon stored in the inventoried trees at the Davis campus is 216 tons and total amount of CO<sub>2</sub> absorbed by the trees is 783 tons.

## 2. Project Overview:

This project focuses on gathering information on certain parameters of the trees at Sheridan College-Davis Campus such as tree diameter, crown width, the height of trees, carbon stored in trees, carbon dioxide absorbed by the trees, and health conditions of the trees. All this information is compiled in excel spreadsheets and inventories were prepared. The GPS location of the trees is marked on Google maps. The inventories allow the growth rate of trees to be tracked and compared to data of different years to make recommendations regarding planting the best species that help mitigate climate change. Carbon dioxide absorption for different tree species present on the Davis campus was calculated to determine which tree species will result in

maximum carbon storage for future tree plantation at Sheridan College-Davis Campus in Brampton.

## 2.1 ACER Background:

ACER is a non-profit organization. It received its first funding in 1996 from Environment Canada. It has undertaken long-term; community-based monitoring of biodiversity and ecosystem. ACER developed BIOBAG which has tools & equipment for tree measurement & identification. ACER developed a biodiversity climate change planting plot to determine the success of 76 species/2157 trees that were planted & measured by students. ACER held multiple workshops & conferences to generate awareness on climate change. ACER conducts & supports multiple internships at different colleges to lead community planting & tree inventory.<sup>1</sup>

## 2.2 Project Objective:

Tree Mapping is the main objective of the project in which measurement of different tree parts is done in order to obtain numeric data which helps to identify the growth of trees as well as keep the inventory. Different parts of a tree are measured such as the diameter of tree, crown width, height, and health status of each tree and recorded in the data sheet. Data collected is used to prepare inventory sheets, carry out calculations for determining total tree height, carbon stored in trees, carbon dioxide absorbed and Tree Mapping on Google Maps. Data is also used to analyze & compare the tree measurements with the previous year measurements to predict the growth rate for tree species.

## 2.3 Project Goal & Scope:

Goal & Scope of project are:

- Increase the sustainability performance of Sheridan College by keeping tree inventory  
Analyze the pre-recorded data and recommended some solutions to plant new trees
- Tree mapping at Sheridan College Davis Campus about 200 trees by team of 3 people
- GPS Log software is used to make a map of measured trees.
- Compile and analyze all the data collected from the field work on the spreadsheets, generate a tree map for Sheridan College Davis Campus.
- Carry out carbon dioxide absorption and calculate carbon storage for different tree species found on Davis Campus.

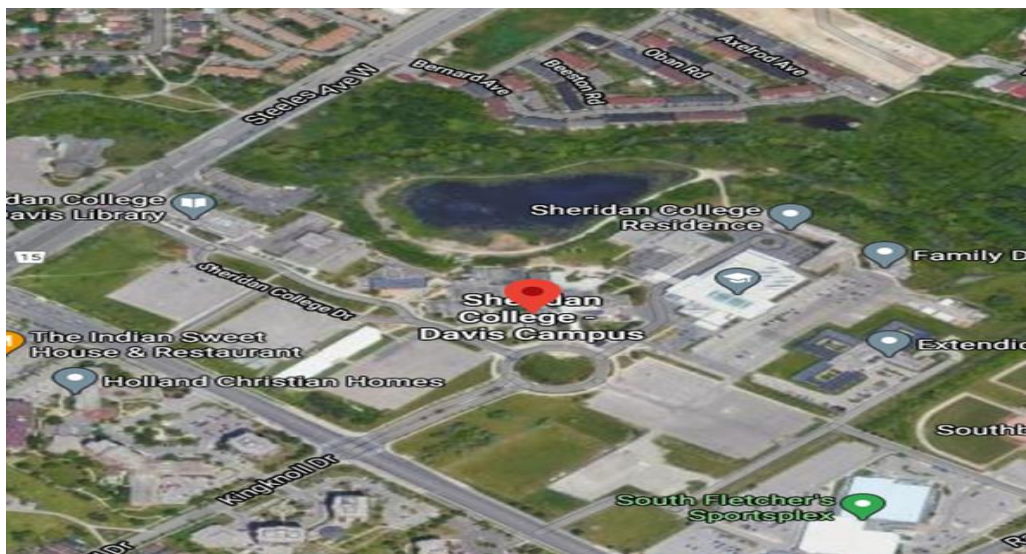


Figure 1: Google map for Sheridan College Davis Campus<sup>2</sup>



### 3. Overview of Project Activities:

Project work was divided into 2 parts: Field Work & Online work. Field work comprises carrying out the tree measurements, identification & labelling for 400 trees in total. Online work comprises data compilation, calculation & Tree mapping. Thus Project activities that were carried out include- 1) Tree Measurements, 2) Tree Identification 3) Research on Mulching 4) Carbon absorption 5) Carbon storage calculations 6) Tree Mapping

#### 3.1 Tree Measurement

##### 3.1.1 Location

The location of a tree is determined by locating its longitude and latitude coordinates with the help of a software or Google location. Noting the latitude & longitude of tree is important to generate the tree Map for Davis campus. Google map service was used to note the locations trees as it is an accurate & convenient technique.

##### 3.1.2 Diameter Measurement

To measure tree diameter, first, measure four and a half feet (4.5') or 130cm above the ground. Mark the position of tree trunk at 130cm and then wrap the diameter tape around the tree trunk and read the point where first ends meet on the tape to give the diameter reading. If the tree is divided into more than one trunk before 130cm from the ground, measure the diameter for both trunks, each will be considered as a tree. The readings on the diameter tape are already divided by 3.1416.



Figure 2: Tree Diameter Measurement during project

### 3.1.3 Crown Width

Measurement of crown widths are taken to determine the crown area. Tree crown is the top portion of tree bearing leaves which grows from the trunk of the tree. Tree crown shapes are different according to tree species and whether they are in a forest or free standing.

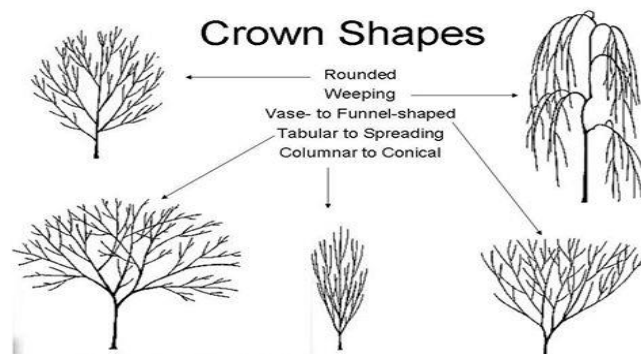


Figure 3: Different tree crown shapes<sup>3</sup>

Crown measurement was taken two directions at right angles. The longest branch from the opposite direction was measured using 30m. measuring tape while touching the trunk. The longest branch end was aligned with the upright hand and the elbow pointing to measuring tape for greater accuracy. The second width was taken perpendicular to the first. The area is calculated by multiplying Width 1 by Width 2. The crown depth measurement can then later be used to calculate crown volume – a sign of tree health.

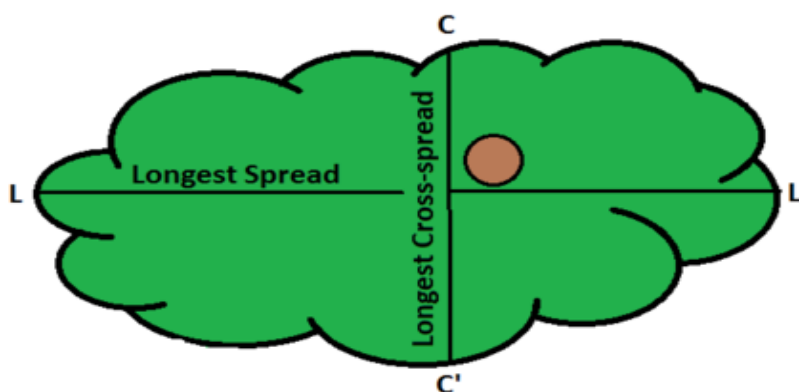


Figure 4: Tree crown width measurement technique<sup>4</sup>

### 3.1.4 Compass Readings

The compass bearing is taken from the tree along a clear line of sight to the person with the clinometer. This compass bearing allows a later check of the height by knowing the direction from tree to where the height was exactly measured, perhaps years later. If the compass reading is not taken we will not be able to accurately remeasure the tree height.

### 3.1.5 Clinometer readings

A Clinometer is a tool to measure the height angle of a tree. Clinometer readings are taken at 20 meters distance from tree. The measurement is taken 20 metres distance from tree with a clear line of sight. Directions are noted with compass reading as explained above. The clinometer is used to take 3 height angles for a particular tree.  $1^\circ$  is recorded for the top most height of the tree, i.e. top most branch of tree.  $2^\circ$  is noted for bottom most part of the tree, i.e. at the bottom of trunk. The  $3^\circ$  angle is noted where the first branch of tree occurs. All three height angles are used to calculate the height in metres.

### 3.1.5.1 Use of Clinometer: -

- Hold the Clinometer where the top pointer is away from you. The top pointer helps to line the sight between object you measure and your eye.
- See through the lens, focus on the top, bottom, then middle of the tree.
- There is scale on other side of lens shows degrees of the angles for each reading.
- Record the readings from scale for the upper, lower and the lowest branch. (tree top, tree base and the first or lowest branch on the trunk).

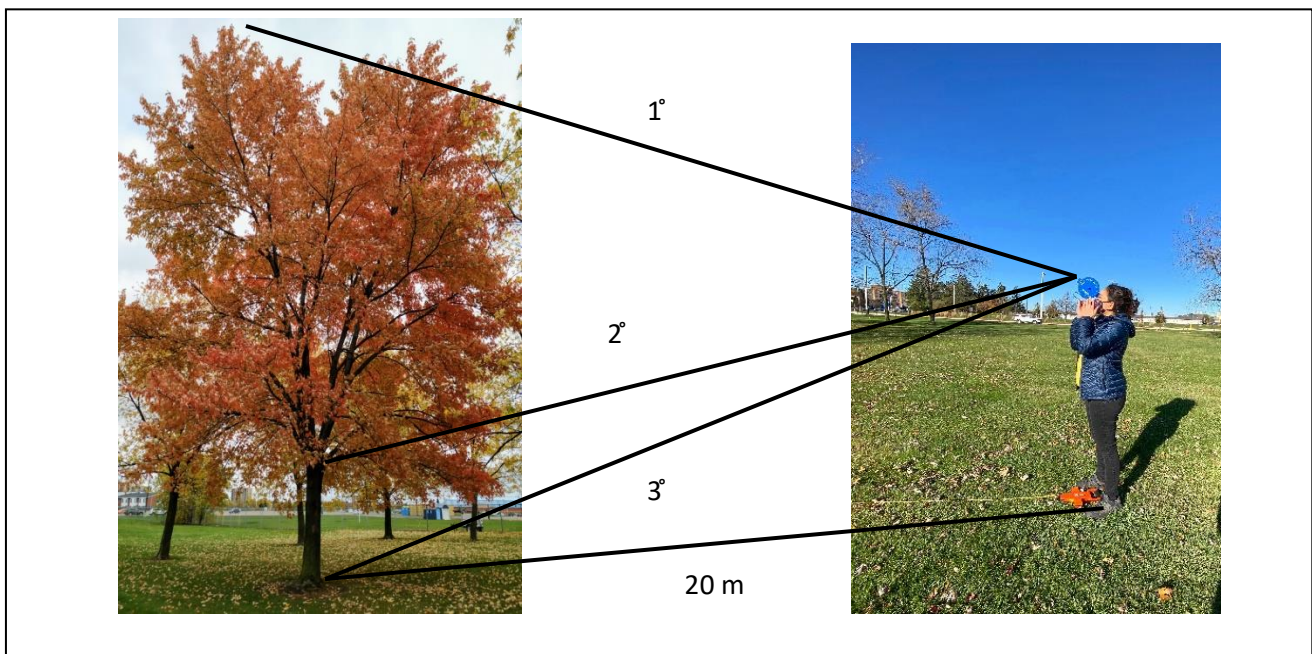


Figure 5: Tree height measurement during project

### 3.1.7 Labelling trees

The tree is given a coloured tape to mark trees that are already measured. Tree number and date are written on it. This label helps prevent confusion of the area covered on the campus. The format used by our team member was – Tree number/Group number/Date

### 3.1.8 Health status of tree

Health codes are used to define the status of tree such as A for Alive and B for Dead, S for Standing, L for Leaning and P for Prone. We note the status of health on record sheet to elaborate on the growth condition of trees.

Health Codes also help us to note any damage seen on each tree.

Certain codes are utilized to define the mechanical damage and defects of tree. Such as:-

Table 1: Health codes used in record data sheet

NN-None	CG-Complete Girding
BD-Bark Damage	DV- Minor Damage
TB-Significant Top Breakage	AB- Animal Browsing
RD-Visible Root Damage	II- Insect Infestation

## 3.2 Tree Identification:

Tree identification is the most important part of tree mapping process. Tree identification is aided by different tree characteristics such as leaf, bark, seeds, fruits, twigs, and buds, etc. Tree identification is also important because every tree species have different requirements and the

knowledge regarding the tree's requirement can be very useful to determine what tree should be planted in a particular area. Moreover, tree identification is also helpful for writing health notes for trees. For instance, identification helps to know why a specific tree species is not doing well or unhealthy or affected by pests or disease and why some certain tree species are not found in certain locations or weather conditions. The good health of any tree species depends upon some important conditions or requirements which include the amount of sunlight, shade tolerated temperature requirements, water, and nutrient levels needed for growth. Last but not least, tree identification also contributes to environmental and social values. For instance, people who have interest and knowledge about tree characteristics then it is a good way of communication because people can share a common language and can explore natural beauty.<sup>5</sup>

Trees were identified by following some simple steps mentioned below:

- The very first step is recognition of tree name, every tree has a common and a scientific name. Common names are assigned locally by local cultures and used in common parlance. Scientific names are grouped by family, genera, and species and never change.
  - Common Name: Silver Maple
  - Scientific Name: *Acer saccharinum*
  - Family: Sapindaceae
  - Genus: *Acer*
  - Species: *Epithet Saccharinum*
- In the subsequent steps tree identification features such as Leaf, Twig & Bud, Bark, Seed, Fruit, and Flower were used.
- **Leaf Identification:** Leaf identification includes leaf type, arrangement on twig, leaf shape, and leaf margin.



Figure 6: Silver Maple leaves are whitish underneath and note the deep notches of Silver Maple.<sup>6</sup>



Figure 7: Silver Maple keys are very large and distinctively shaped.

- Trees were also identified by using the “LeafSnap App”. After inputting Location and snapping a picture of the leaf identification was in a matter of seconds. The app was useful during winters and fall season because most of the trees did not have any of the leaves, flowers, seeds, and fruit. It was challenging to identify which tree is which because all trees were seemed similar to our untrained eyes.



Figure 8: Pictures of Silver Maple [Leaves, Flowers, and Fruits]<sup>7</sup>


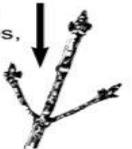











<b>BRANCHING</b>		<b>CONIFERS</b>	
<p><b>ALTERNATE BRANCHING:</b> A branching pattern where side branches, leaves, and leaf scars do not grow directly across from each other.</p> 	<p><b>OPPOSITE BRANCHING:</b> A branching pattern where side branches, leaves, and leaf scars grow directly across from each other.</p> 	<p><b>BUNDLES:</b> Groups of needles held together at the base by a small papery wrap called a fascicle.</p> 	<p><b>CONIFEROUS:</b> A tree that bears cones and has needles. Also called evergreens.</p>
<b>DECIDUOUS</b>		<p><b>EVERGREEN:</b> A tree that bears cones and has needles. Also called coniferous.</p> 	
<p><b>BROAD-LEAFED:</b> A tree that sheds all of its leaves annually. They have leaves as opposed to needles. These trees are also called deciduous.</p>	<p><b>DECIDUOUS:</b> A tree that sheds all of its leaves annually. These trees are also called broad-leafed.</p>	<p><b>SCALY:</b> Conifer needles that are flat and overlapping, like fish scales.</p> 	<p><b>SIMPLE LEAF:</b> A type of leaf that has one blade attached to a twig by a petiole.</p>
<p><b>COMPOUND LEAF:</b> A type of leaf that has one stem and many smaller leaflets. A leaf begins where the leaf petiole attaches to the twig.</p> 	<p><b>LEAFLETS:</b> Smaller parts of leaves that often resemble leaves themselves. They join together along the petiole. The leaf petiole attaches to the twig.</p>	<p><b>PETIOLE:</b> The stalk that supports a leaf and attaches the leaf to the twig. They can be round, flat, or square.</p> 	<p><b>VEINS:</b> Distinct lines of tissue that form the framework of a leaf. Used for food and water transport.</p>
<b>LEAF MARGINS</b>		<b>PETIOLE AND NEEDLE SHAPE CROSS-SECTIONS</b>	
<p><b>ENTIRE:</b> A type of leaf edge that is smooth and has no wavy or rough edges.</p> 	<p><b>TOOTHED:</b> A type of leaf edge that has small points or bumps along it (teeth). Single-toothed means that all the teeth are about the same size. Double-toothed means that on each tooth there is a smaller tooth.</p> 	<p><b>FLAT</b></p>  <p><b>SQUARE</b></p>  <p><b>ROUND</b></p> 	
<p><b>LOBED:</b> A type of leaf edge that has large rounded parts.</p>	<p><b>SINUSES:</b> The spaces in between lobes on a leaf.</p> 		
<p><b>MARGIN:</b> The outer edge of the leaf.</p>			

Figure 9: Distinct characteristics of tree important for its identification<sup>5</sup>



### 3.3 Research on Mulching:

**Mulch:** A technique of adding layers of material to the surface of the soil to suppress weeds and prevent water loss through evaporation. Mulch is used to retain moisture in the soil, keep the soil cool, prevent frost heaving in winter, and make to the garden more attractive and beautiful.

There are three types of mulching:

- Organic Mulching
- Inorganic and Synthetic Mulching.

**Organic Mulch:** This type of mulching helps to improve the soil structure, drainage, and nutrient-holding capacity as they decompose. Organic mulch will decompose and has to be replaced, but in the process, it will also improve the soil structure and its organic content.

Various Types of Organic Mulch:-Bark, shredded or chipped, Grass Needles, Newspaper, Shredded Leaves and Straw.<sup>8</sup>



Figure 10: Different types of mulching<sup>9</sup>

**Inorganic and Synthetic Mulch:**-Synthetic and inorganic mulches do a good job of holding moisture and blocking weeds. They don't provide any nutrients value in the soil as organic can do. But they don't compose quickly as organic or require any quick replacement. However, as plastic decomposes, it has a detrimental impact on soli and the environment.

Some types of Synthetic and Inorganic Mulching:-Black Plastic, Landscape Fabric, Stone or Gravel.


In this report, we have checked the status of mulching at the Sheridan Davis campus. Here, we are noting mulching status from 1 to 4 as

- If there is no mulching around tree = 1
- If there is some donut around tree = 2
- If mulching is more than 1 m across tree = 3
- If mulching around tree is like a volcano = 4



Figure 11: Mulching pattern observed on campus during project

### 3.4 Record data sheet:



12 Helene Street North, Unit 1001  
Mississauga, ON L5G 3B5  
Tel: (905) 891-6004  
Email: aceracinfo@gmail.com

**MATURE TREES DATA SHEET (>4 cm DBH)**

DATE: \_\_\_\_\_ PLOT NAME: \_\_\_\_\_ QUADRAT #: \_\_\_\_\_

NAMES: \_\_\_\_\_

PINK		GREEN		YELLOW		ORANGE		YELLOW		BLUE				ORANGE	
DESCRIPTION		LOCATION		DBH		CROWN WIDTH (CW)		HEIGHT (CLINOMETER, TANGENT TABLE, 30m TAPE)				STATUS		HEALTH NOTES	
TREE #	COMMON NAME	SIDE # (1-4)	W (0.00m)	L (0.00m)	Diameter tape at 1.3m (0.00cm)	CW1 (0.00 m)	CW2 (0.00 m)	Compass Bearing (°)	Upper Angle (°)	Lower Angle (°)	CW Depth (°)	Total Height (0.00m)	USE CODE	HEALTH CODE	HEALTH NOTES
23	sugar maple	1	15.35	10.65	48.35	60.45	70.67	60	45	7	15	22.40	AS	II	Broken Branch

Note: For trees with multiple trunks, use tallest trunk of tree for measurements. Also measure and include CW of total area of trunks for that tree.

**STATUS CODE**  
A: Alive  
B: Dead  
  
S: Standing  
L: Leaning  
P: Prone

**HEALTH CODE**  
**Mechanical Damage**  
NN: None  
BD: Bark Damage  
TB: Significant Top Breakage  
RD: Visible Root Damage  
CG: Complete Girding

**Defects**  
NN: None  
DV: Minor Damage/Vandalism  
AB: Animal Browsing  
II: Insect Infestation  
SD: Symptom of Disease

Figure 12: Record data sheet used during project

Record sheet was developed by ACER team to record tree measurements in a uniform manner. Record sheet has 1) Tree Description – includes tree number and tree common name based on tree identification. 2) Tree location – includes latitude & longitude of tree. 3) DBH measurement of tree diameter is in metres. 4) Crown Width- includes two measurements taken in perpendicular to each other. 5) Height measurement of tree- includes compass reading, 3 angle measurements and final calculate height in metres. And the last section is for 6) status and health notes of trees are described based on the codes provided on the record sheet. We have also added mulching status on our record sheet.

### 3.5 Carbon Absorption:

Trees absorb carbon dioxide during photosynthesis. The amount of carbon dioxide absorbed by different tree species present on the campus was calculated. A mature tree absorbs 48 pounds of carbon per year. It is estimated that one acre of forest has capacity to absorb twice the amount of carbon dioxide produced by car with average mileage in one year. Also, studies have shown that there is reduction of 88% of nitrate & 76% of phosphorus found in agricultural runoff when passed through streamside buffer of forest.

Carbon dioxide absorption and stored carbon calculations are carried out by following steps:

**Step 1:** Calculate total biomass of carbon stored by using the formula below. The 'a' & 'b' are constant specific for each tree species. For common northern tree species these factors were calculated by researchers. These specific factors were used to calculate carbon stored by each tree measured.

$$\text{Mass of Carbon in tree: } M = a(D)^b$$

Here, D is the diameter of the tree, recorded during tree measurement.

**Step 2:** Calculation of the mass of carbon dioxide absorbed by the tree uses the formula mentioned below using a species factor. It gives us total amount of carbon dioxide absorbed by particular tree species.

- **Mass of Carbon absorb = Mass of carbon in tree X 3.67**

**For Example: For Heritage Red Oak of 165 cm diameter:**

- $M = a(D)^b = 0.11 \times (165\text{cm})^{2.46} = 31,3621.95 \text{ kg} = 31 \text{ tons (rounded) of Carbon stored}$
- $\text{Mass of CO}_2 \text{ absorbed} = \text{mass of Carbon stored} \times 3.67 = 31\text{tons} \times 3.67 = 115,098 \text{ tons}^{10}$

Tree growth are non- linear, at the younger stages of tree it has greatest sequestration. Depending on growth pattern and tree species there is drop in CO<sub>2</sub> sequestration. Multiple factors play important role in carbon absorption of tree there impact on climate change is undeniable. It can fix the localized carbon pollution problem with a uniform carbon absorption pattern. Thus this part of the project will help indicate the tree species impact on the carbon dioxide absorption and carbon stored in trees currently on Davis campus in 2020.

## 4. Project Timelines:

Project was undertaken for Environmental Control program fall semester 2020 from 16 Sept 2020 to 15 Dec 2020.

Group 1& Group 2 were assigned with field work and 1 person was assign with online work. The target was to complete 200 tree measurements per group & prepare their inventory for trees on Davis campus and successfully map them.

Table 2: Project schedule & timeline

Date	Group 1 & Group 2	Online work

16 Sep 2020	Introduction to project, Team members, Training by ACER team and distribution of tree Mapping kit. Tree measurement of 10 Trees on Davis campus	Research work on tree inventories by visiting ACER website
23 Sep 2020	Tree measurement of Tree #. 11- 27 trees. Group 1 Working near the back portion of A building and Group 2 working at front portion of H building near parking lot	Preparation of inventory sheets, calculations and Google mapping of tree locations
30 Sep 2020	Tree measurement for tree # 28- 48 trees. Group 1: Back portion of J building, Group 2 Near the entrance of J building	Preparation of inventory sheets, calculations and Google mapping of tree locations
7 Oct 2020	Tree measurement from tree # 49- 70 trees. Group 1: Back portion of H building, Group 2: Front Corner turn of J building near McLaughlin & Steeles intersection.	Preparation of inventory sheets, calculations and Google mapping of tree locations
14 Oct 2020	Tree measurement from tree # 71- 103. Group 1: Back portion of H & B building, Group 2: Between Parking lot 6 & 5	Preparation of inventory sheets, calculations and Google mapping of tree locations
21 Oct 2020	Tree Measurement from Tree # 104- 123. Group 1: near Sheridan residency, Group 2: Front portion of parking lot 5 & B Building	Preparation of inventory sheets, calculations and Google mapping of tree locations
28 Oct 2020	Tree Measurement from tree # 124- 150. Group 1: Near the corner portion of M building Group 2: McLaughlin entrance of Davis Campus	Preparation of inventory sheets, calculations and Google mapping of tree locations
4 Nov 2020	Tree measurement from tree # 151 – 175 trees. Group 1: Back portion of B building, Group 2: Corner end portion of campus near McLaughlin road & visitor parking	Preparation of inventory sheets, calculations and Google mapping of tree locations, search work on carbon calculations

11 Nov 2020	Online work for research on mulching & carbon calculation.	Preparation of inventory sheets, calculations and Google mapping of tree locations
18 Nov 2020	Online work on Comparative analysis from previous reports of tree mapping on Davis campus. Matching of tree identification	Preparation of inventory sheets, calculations and Google mapping of tree locations
25 Nov 2020	Tree measurement from tree #176-206 trees. Group 1: near parking lot 1 and Group 2: Opposite side of McLaughlin entrance to A building entrance & virtual meeting with ACER team for corrective action on tree identification.	Preparation of inventory sheets, calculations and Google mapping of tree locations
2 Dec 2020	Online work for data compilation, completion of missing data, corrective action on tree identification and preparation for final report	Preparation of inventory sheets, calculations and Google mapping of tree locations
7 Dec 2020	Final Project Presentation	Final Project presentation
14 Dec 2020	Final Project Report Submission	Final Project Report Submission

## 5. Calculations:

Calculations are done to determine certain parameters of the trees such as total tree height, carbon stored in trees and carbon dioxide absorbed by the trees. To determine these parameters particular formulas are used such as:

1. Total height =  $[20 \times \tan(\text{upper angle})] - [20 \times \tan(\text{lower angle})]$

Example: Tree no. 1, where upper angle is 10 and lower angle is -7, total height is calculated by:

$$\begin{aligned}\text{Total height} &= [20 \times \tan (10)] - [20 \times \tan (-7)] \\ &= [20 \times 0.17633] - [20 \times -0.12278] \\ &= 3.5266 - [-2.4556] = 5.9822 = 5.98\end{aligned}$$

Thus, total tree height is 5.98 metres.

2) Carbon absorption calculation is already mentioned in the 3.5 section of the report.

## 6. Environmental Values of Project:

Tree mapping is generally conducted to provide recommendations for future plantation planting which results in a sustainable ecosystem. Comparing the collected data with the previous data and to determine the years growth and over years, the rate of growth.

Additionally, tree inventory and health status help to understand the adverse impact of climate change on the growth patterns of trees. Another importance of tree inventory is to encourage the local community to learn about the importance of trees and engage them to maintain urban forestry.

Hence the main important environmental values of our project are:

1. Maintain the tree inventory of specific Location
2. Tree identification and its carbon absorption rate of specific trees located in area.



3. Help to identify the growth pattern of different tree species by continuing the project for each year.

## 6. Interesting & Challenging Part of Project:

Overall as a group the interesting part for us was to carry out the field work and do the tree mapping. It was entirely a new concept for us, and we were excited to learn and conduct the tree mapping on Davis Campus. We learned a lot about tree identification & specific observation required for tree measurements. It was a great experience for us. Some of the challenges that we faced during our internship were the weather conditions. As it was a fall Internship we were greatly challenged on the weather conditions. Also this is a year of a pandemic due to Covid -19 spread, we were extra cautious for health & safety of all individuals in our project. Sheridan buildings were not accessible due to Covid-19 which was quite challenging. But we have faced all our challenges and have successfully completed our project targets.

## 7. Result:

### 7.1 Population Density

The greatest numbers of tree species present at Sheridan-Davis Campus are Japanese tree lilac and silver maple. Southern catalpa, Norfolk Island pine, Trembling aspen and western serviceberry have lesser numbers.

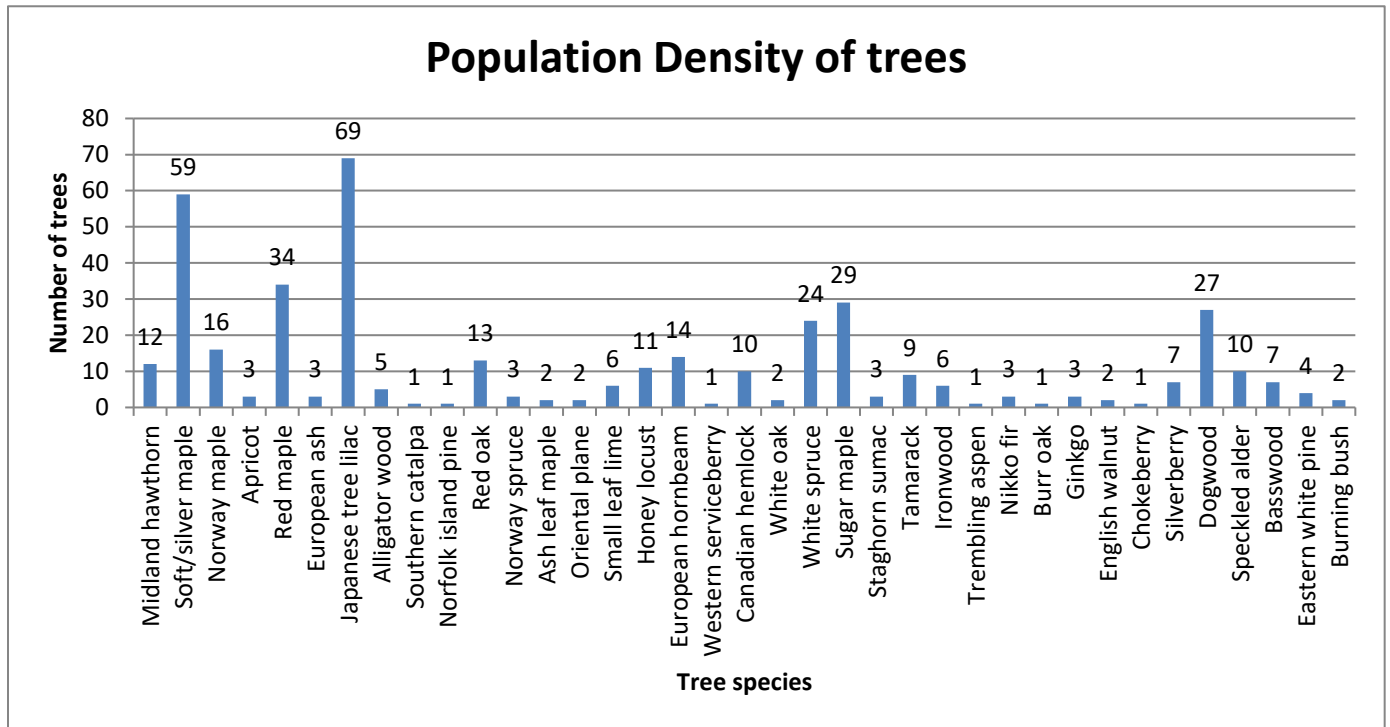


Figure 13: Graph of population Density

## 7.2 Carbon stored and carbon dioxide absorbed by the trees

Silver maple has the capacity to absorb the maximum amount of carbon dioxide and store a maximum amount of carbon. Japanese tree lilac and silver maple are the most common species found at Sheridan-Davis Campus.

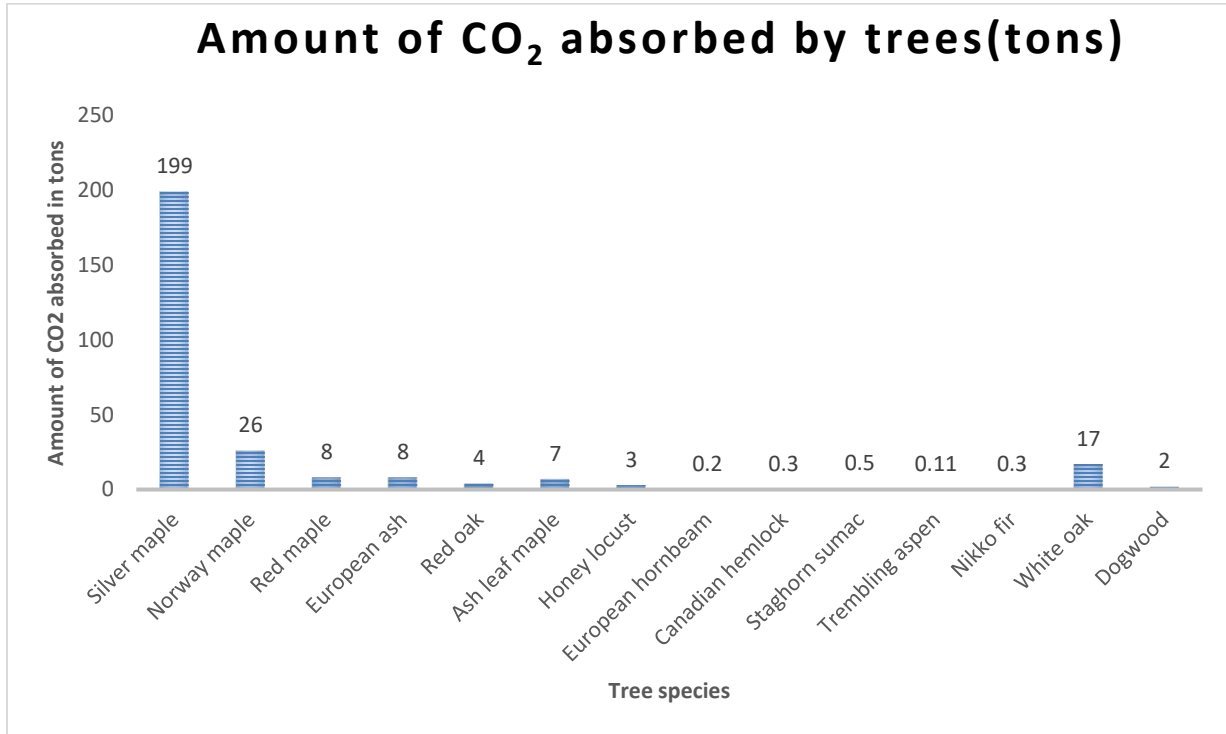


Figure 14: Graph of carbon dioxide absorbed by tree different tree species in tons

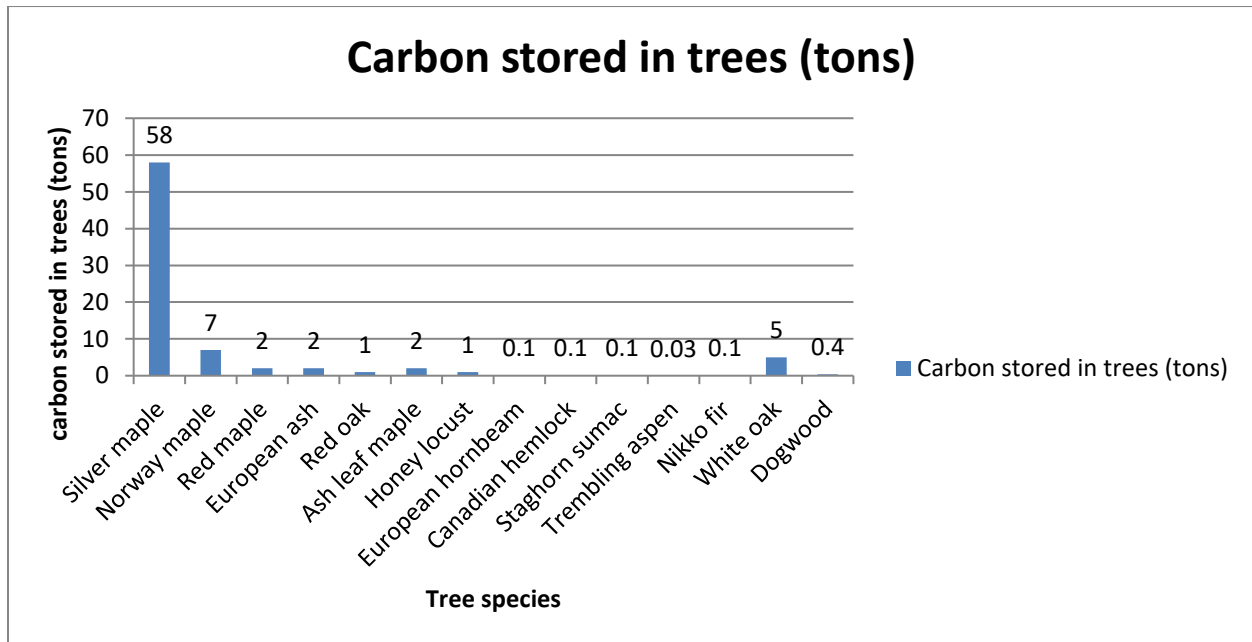


Figure 15: Graph of carbon stored in trees (tons)

### 7.3 Google map of the tree locations

Locations of trees are marked on Google maps with the help of latitude and longitude coordinates to track them in future. The trees are given tree numbers and species names as identifiers.

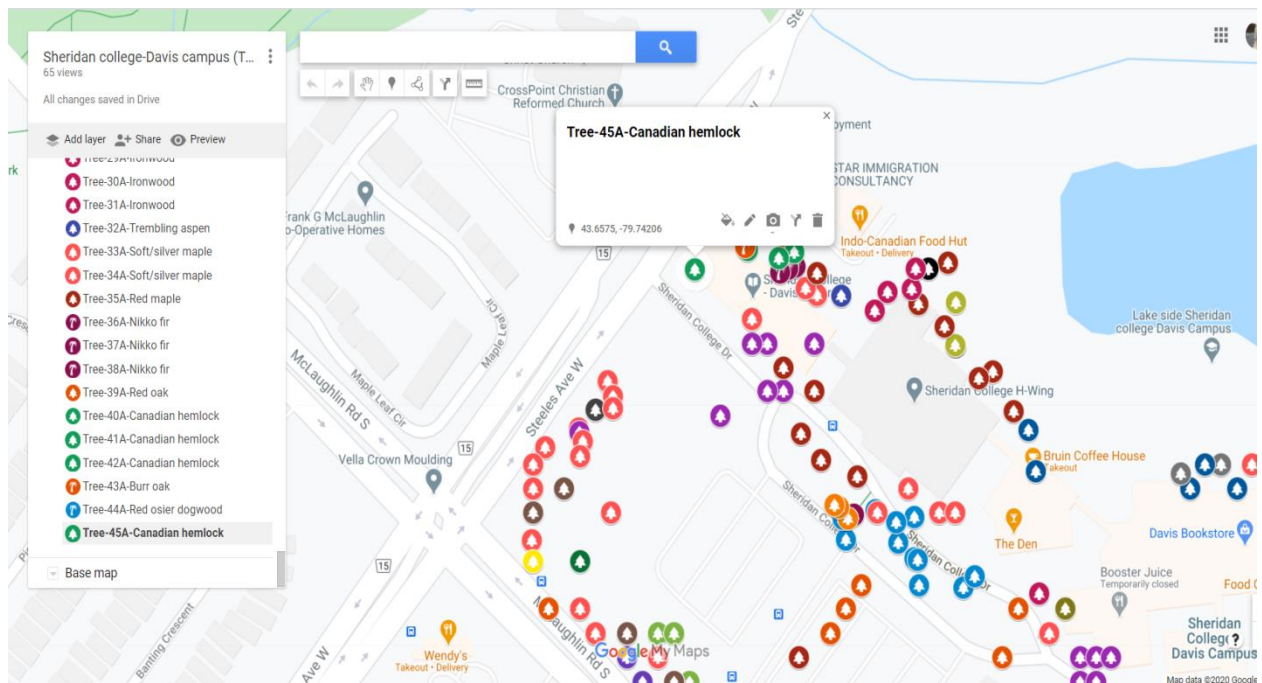


Figure 16: Google map of the tree locations

### 7.4 Mulching around trees

The mulch status of the trees at Sheridan-Davis Campus was checked and different codes (1 to 4) are provided according to the type of mulching around the trees. Total of 406 trees were observed and the mulch status of these trees is shown in the pie chart below:

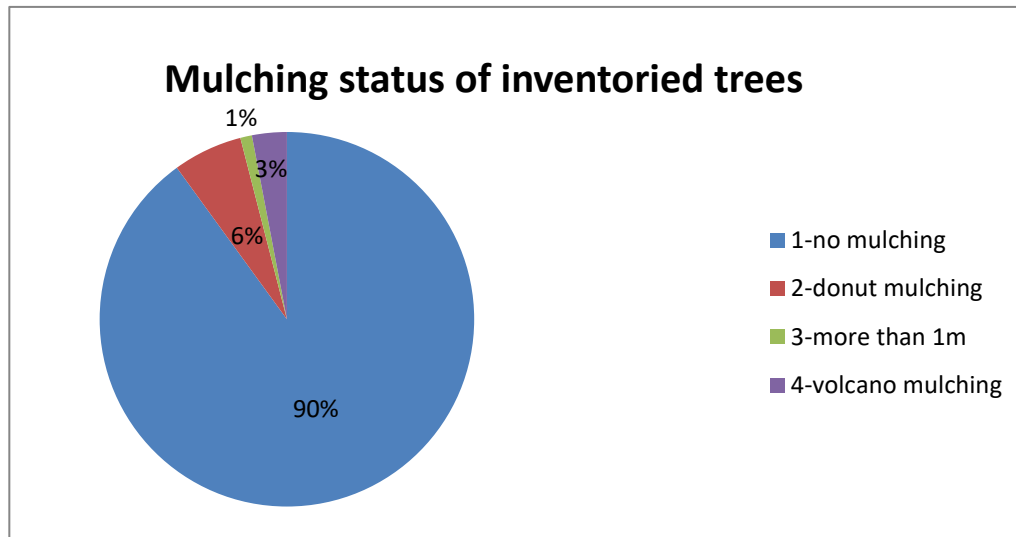


Figure 17: Percentage of trees with different type of mulching

## 8. Conclusion & Recommendations:

It is recommended that the best tree to plant at the Sheridan-Davis campus is silver maple and Japanese tree lilac as these are in the best health conditions. Silver maple is best tree to reduce the impact of GHG emissions because of its capacity to absorb carbon dioxide. These tree species can be very helpful in mitigating climate change. Also, a layer of mulch should be added around the trees to retain moisture and provide nutrients. Mulch helps them stay healthy and enhances their growth rate. More trees should be planted at campus to increase the total carbon dioxide absorption to help lower the impact of harmful greenhouse gases. Currently, trees at the Sheridan Davis Campus store 216 tons of carbon and 783 tons of carbon dioxide has been absorbed.

## 9. References:

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- (2) Google Maps <https://www.google.com/maps/d/viewer?f=q&geocode&ie=UTF8&om=0&oe=UTF8&msa=0&mid=1U5SHtQbEdsh3aRGCqV4fZdRsD6I&ll=44.76428700000002%2C-106.944716&z=17/> (accessed Dec 9, 2020)
- (3) Inglewood Tree services <http://inglewoodtreeservice.ca/tree-crown-reduction/>(accessed on Dec 9, 2020)
- (4) Wikiwand Tree crown measurements [https://www.wikiwand.com/en/Tree\\_crown\\_measurement](https://www.wikiwand.com/en/Tree_crown_measurement) (accessed on Dec 9, 2020)
- (5) NRC Identify broadleaf tree <https://tidcf.nrcan.gc.ca/en/trees/identification/broadleaf/> (accessed on Dec10, 2020)
- (6) YourLeaf [https://www.yourleaf.org/sites/default/files/silver\\_maple\\_flower\\_and\\_fruit\\_opt\\_300.png/](https://www.yourleaf.org/sites/default/files/silver_maple_flower_and_fruit_opt_300.png/) (accessed on Dec 10, 2020)
- (7) Your leaf [https://www.yourleaf.org/sites/default/files/silver\\_maple\\_form\\_and\\_leaf\\_opt\\_300.png/](https://www.yourleaf.org/sites/default/files/silver_maple_form_and_leaf_opt_300.png/) (accessed on Dec 10, 2020)
- (8) USDA. Mulching [https://www.nrcs.usda.gov/wps/portal/nrcs/detail/?cid=nrcs143\\_023585](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/?cid=nrcs143_023585) (accessed Dec 11, 2020).
- (9) Good Environmental News <https://www.ijdesign.com/blog/organil-mulch-made-in-colorado/>(accessed on Dec 12, 2020)
- (10) Janowiak, M. The Carbon in Trees. *North. Inst. Appl. Sci. , Michigan Technol. Univ.* **2009.**(accessed Dec 13, 2020).

# 10. Appendix

## Group 1

TREE NO.	COMMON NAME	SCIENTIFIC NAME	DBH	CROWN WIDTH		HEIGHT (Clinometer, Tangent Table, 30 m TAPE)				MULCHING	STATUS	LOCATION		COMPASS BEARING (°)
				Diameter Tape at 1.3m	CW1	CW2	UPPER ANGLE (°)	LOWER ANGLE (°)	CW DEPTH (°)			TOTAL HEIGHT (m)	HEALTH NOTES	
1	Midland Hawthorn	<i>Crataegus rhipidophylla</i>	78 cm	8.2 m	9.50 m	10	-14	-5	8.51		1 A	43.6569	-79.7382	225
2	Western serviceberry	<i>Amelanchier alnifolia</i>	5.1 cm	2.30 m	2.20 m	10	-2	-4	4.23		1 A	43.657	-79.7381	200
3	Canadian hemlock	<i>Tsuga canadensis</i>	5.1 cm	3.15 m	3.10 m	4	-2	2	2.1		1 A	43.658	-79.7383	65
4	Canadian hemlock	<i>Tsuga canadensis</i>	4.6 cm	2.40 m	2.15 m	9	2	4	2.47		1 A	43.6568	-79.7384	145
5	Canadian hemlock	<i>Tsuga canadensis</i>	5.0 cm	2.98 m	2.80 m	5	-1	0	2.1		1 A	43.6568	-79.7384	140
6	Soft/Silver maple	<i>Acer saccharinum</i>	4.5 cm	2.20 m	2.80 m	3	-1	-2	1.4		1 A	43.6567	-79.7385	160
7	White oak	<i>Quercus alba</i>	8.0 cm	3.72 m	3.50 m	2	-3		3.51		1 A	43.6567	-79.7387	135
8	White spruce	<i>Picea glauca</i>	10 cm	4.6 m	3.62 m	20	-3	0	8.33		1 A	43.6567	-79.7388	120
9	White spruce	<i>Picea glauca</i>	27.9 cm	1.40 m	6.75 m	28	-5	-3	12.38		1 A	43.6566	-79.7386	130
10	White spruce	<i>Picea glauca</i>	22.8 cm	4.51 m	5.20 m	27	0	1	10.2		1 A	43.6566	-79.7389	125
11	Sugar maple	<i>Acer saccharum</i>	49.1cm	11.1m	10.3m	23	-1	0	8.84		1 A	45.656633	-79.739505	275
12	Sugar maple	<i>Acer saccharum</i>	6.5cm	3.39m	3.35m	18	-2	9	7.20		1 A	43.456643	-73.903679	272
13	White oak	<i>Picea glauca</i>	65.5cm	6.80m	8.2m	29	-3	8	12.13		1 A	43.65662	-79.738958	265
14	Ironwood	<i>Ostrya virginiana</i>	22cm	6.60m	7.0m	35	-4	4	15.40		1 A	43.656165	-79.739862	165
15	Red maple	<i>Acer rubrum</i>	10cm	4.13m	4.75m	9	-1	0	3.52		1 A	43.656919	-79.740024	153
16	White spruce	<i>Picea glauca</i>	15.1cm	3.60m	3.14m	12	-1	1	4.60		1 D	43.65667	-79.739884	274
17	White spruce	<i>Picea glauca</i>	17.4cm	4.10m	3.99m	12	-4	0	5.65		1 A	43.656844	-79.739933	167
18	Red maple	<i>Acer rubrum</i>	11.4cm	6.29m	5.35m	12	-2	0	4.95		1 A	43.657082	-79.740161	285
19	Red maple	<i>Acer rubrum</i>	7.0cm	2.75m	3.05m	4	-3	-1	2.45		1 A	43.657057	-79.740248	159
20	Red maple	<i>Acer rubrum</i>	4.3cm	3.11m	3.65m	6	-11	-5	5.99		1 A	43.65719	-79.740393	313
21	Staghorn sumac	<i>Rhus typhina</i>	5.4cm	2.42m	2.12m	11	1	6	3.54		1 A	43.65719	-79.740393	272
22	Staghorn sumac	<i>Rhus typhina</i>	5.0cm	1.60m	1.05m	10	-5	3	5.28		1 A	43.65719	-79.740401	272
23	Staghorn sumac	<i>Rhus typhina</i>	20cm	6.38m	6.80m	11	-4	0	5.29		1 A	43.65737	-79.740394	203
24	Red maple	<i>Acer rubrum</i>	15.7cm	2.90m	3.48m	11	-2	0	4.59		1 A	43.657269	-79.740469	287
25	Red maple	<i>Acer rubrum</i>	9.4cm	3.71m	3.52m	10	-6	-5	5.63		1 A	43.657361	-79.740636	289
26	Red maple	<i>Acer rubrum</i>	27.7cm	9.23m	9.30m	6	-10	-5	5.63		1 A	43.657534	-79.740448	258
27	Tamarack	<i>Larix laricina</i>	D1=8.2cm D2=7.8cm D3=9.2cm D4=6.5cm	11.51m	11.55m	25	-4	-3	10.72		1 A	43.657511	-79.74057	249
28	Ironwood	<i>Ostrya virginiana</i>	16.4cm	7.17m	7.15m	14	-10	-5	8.51		1 A	43.657425	-79.740679	235
29	Ironwood	<i>Ostrya virginiana</i>	18cm	7.95m	7.70m	15	-4	-2	6.76		1 A	43.657512	-79.740655	219
30	Ironwood	<i>Ostrya virginiana</i>	11cm	4.50m	4.18m	12	-3	2	5.30		1 A	43.657336	-79.740913	44
31	Ironwood	<i>Ostrya virginiana</i>	7.9cm	3.15m	4.3m	10	0	2	3.53		1 A	43.657412	-79.740835	227
32	Trembling Aspen	<i>Populus tremuloides</i>	13cm	4.33m	4.58m	11	0	1	3.89		1 A	43.657396	-79.74113	170
33	Soft/Silver maple	<i>Acer saccharinum</i>	10cm	4.35m	4.81m	14	0	1	4.99		1 A	43.6574	-79.741287	170
34	Soft/Silver maple	<i>Acer saccharinum</i>	10.5cm	4.35m	4.21m	13	-4	-1	6.02		1 B	43.657429	-79.741353	163
35	Red maple	<i>Acer rubrum</i>	12.6cm	5.40m	5.47m	8	-1	0	3.16		1 A	43.65749	-79.741288	22
36	Nikko fir	<i>Abies homolepis</i>	10.3cm	2.66m	2.74m	14	-1	0	5.34		1 AS	43.657519	-79.741418	279
37	Nikko fir	<i>Abies homolepis</i>	13cm	2.20m	3.20m	15	2	3	4.66		1 AS	43.657511	-79.741468	281
38	Nikko fir	<i>Abies homolepis</i>	7.4cm	1.81m	1.90m	3	0	1	1.05		1 AS	43.657494	-79.741521	294
39	Red oak	<i>Quercus rubra</i>	9.4cm	2.40m	2.42m	11	2	6	3.19		1 AP	43.657576	-79.741476	315
40	Canadian hemlock	<i>Tsuga canadensis</i>	11cm	4.66m	4.91m	6	-7	4	4.56		1 AS	43.657578	-79.741429	292
41	Canadian hemlock	<i>Tsuga canadensis</i>	9.2cm	4.66m	4.63m	13	-4	0	6.02		1 AS	43.657554	-79.741528	162
42	Canadian hemlock	<i>Tsuga canadensis</i>	13.5cm	6.12m	5.30m	14	-6	-1	7.09		1 AS	43.657587	-79.741724	170
43	Burr oak	<i>Quercus macrocarpa</i>	9.31cm	2.65m	4.40m	11	-1	2	4.24		1 AS	43.657598	-79.741744	132
44	Dogwood	<i>Cornus</i>	13.5cm	2.94m	3.46m	10	-4	-1	4.93		1 AS	43.657796	-79.741949	201
45	Canadian hemlock	<i>Tsuga canadensis</i>	5.1cm	3.4m	3.55m	15	0	2	5.36		1 AS	43.657507	-79.742063	78
46	Sugar maple	<i>Acer saccharum</i>	32.4cm	7.6m	9.20m	30	3	6	10.50		1 AS	43.6554	-79.737771	5
47	Sugar maple	<i>Acer saccharum</i>	D1=30.3cm D2=25.3cm	8.72m	8.32m	9	3	4	2.12		1 AS	43.655376	-79.737681	103
48	Sugar maple	<i>Acer saccharum</i>	25cm	8.80m	7.3m	15	-1	0	5.71		1 AS	43.65526	-79.737462	311
49	Sugar maple	<i>Acer saccharum</i>	6.6cm	3.1m	3.1m	17	-2	0	6.81		1 AS	43.654925	-79.736787	230
50	Sugar maple	<i>Acer saccharum</i>	6.5cm	2.41m	2.45m	9	-2	-1	3.87		1 AS	43.654904	-79.736675	240

51	Sugar maple	Acer saccharum	3.5cm	3.33m	3.54m	15	0	1	5.36	1 AS	43.654862	-79.736617	222
52	Sugar maple	Acer saccharum	6.2cm	2.92m	2.72m	10	-4	-2	4.93	1 AS	43.654775	-79.736615	227
53	Sugar maple	Acer saccharum	11cm	5.10m	5.19m	14	0	2	4.99	1 AS	43.654746	-79.736555	224
54	Sugar maple	Acer saccharum	13.4cm	3.40m	4.24m	15	-1	0	5.71	1 AS	43.654775	-79.736464	225
55	Sugar maple	Acer saccharum	10.2cm	3.22m	3.95m	12	-2	1	4.95	1 AS	43.654722	-79.736419	225
56	Sugar maple	Acer saccharum	6.1cm	3.20m	3.50m	13	-3	-1	5.67	1 AS	43.654728	-79.736357	222
57	Sugar maple	Acer saccharum	10.2cm	3.5m	2.75m	7	-1	0	2.80	1 AS	43.654837	-79.736221	233
58	Sugar maple	Acer saccharum	4.9cm	2.23m	2.36m	10	1	1.5	3.18	1 AS	43.654608	-79.736242	231
59	White spruce	Picea glauca	4.2cm	2.85m	2.91m	9	0	2	3.17	1 AS	43.654525	-79.736201	238
60	White spruce	Picea glauca	47cm	9.50m	8.70m	44	-5	13	21.06	1 AS	43.654802	-79.740635	44
61	White spruce	Picea glauca	30cm	6.69m	5.42m	25	-4	4	10.72	1 AS	43.654919	-79.740744	89
62	White spruce	Picea glauca	31cm	7.97m	8.0m	26	-3	3	10.80	1 AS	43.65497	-79.74067	90
63	White spruce	Picea glauca	27cm	5.76m	7.51m	20	1	9	6.93	1 AS	43.655101	-79.740536	105
64	White spruce	Picea glauca	21cm	5.40m	5.4m	14	-3	8	6.03	1 AS	43.655332	-79.740396	130
65	White spruce	Picea glauca	35.5cm	6.31m	7.63m	26	-8	5	12.57	1 AS	43.655412	-79.740192	182
66	White spruce	Picea glauca	37cm	9.51m	8.64m	24	4	12	7.51	1 AS	43.654771	-79.740667	300
67	White spruce	Picea glauca	30.5cm	6.2m	7.35m	22	3	7	7.03	1 AS	43.654714	-79.740653	275
68	White spruce	Picea glauca	33.5cm	8.80m	8.49m	31	3	5	10.97	1 AS	43.654682	-79.740653	295
69	White spruce	Picea glauca	37.4cm	9.80m	8.45m	40	7	9	14.33	1 AS	43.654661	-79.740641	295
70	White spruce	Picea glauca	36.4cm	7.90m	7.67m	35	4	6	12.61	1 AS	43.654588	-79.74068	280
71	White spruce	Picea glauca	43cm	14.81m	9.30m	19	-4	-1	8.29	1 AS	43.654696	-79.74073	330
72	White spruce	Picea glauca	34cm	9.13m	9.10m	26	-1	0	10.10	1 B	43.654618	-79.740806	325
73	White spruce	Picea glauca	39.5cm	9.61m	11.90m	22	4	12	6.68	1 AS	43.654868	-79.741043	145
74	White spruce	Picea glauca	30.5cm	7.11m	10.96m	24	-4	-2	10.30	1 AS	43.654599	-79.740658	220
75	Sugar maple	Acer saccharum	33.7cm	8.42m	11.40m	23	-5	1	10.24	1 AS	43.654518	-79.740603	310
76	Sugar maple	Acer saccharum	6.4cm	2.72m	2.58m	12	-2	-1	4.95	1 AS	43.657245	-79.737227	38
77	Sugar maple	Acer saccharum	6.3cm	2.65m	2.76m	15	-2	-1	6.06	1 AS	43.65716	-79.736941	26
78	Sugar maple	Acer saccharum	6.6cm	2.56m	2.94m	16	-5	-4	7.48	1 AS	43.65725	-79.737127	8
79	Sugar maple	Acer saccharum	7.0cm	2.91m	2.69m	17	0	1	6.11	1 AS	43.657266	-79.737004	66
80	Sugar maple	Acer saccharum	6.7cm	2.48m	2.13m	9	0	1	3.17	1 AS	43.657115	-79.736967	53
81	Ginkgo	Ginkgo biloba	5.6cm	2.20m	2.32m	6	-1	4	2.45	1 AS	43.657004	-79.736741	213
82	Ginkgo	Ginkgo biloba	6.5cm	2.40m	2.70m	9	0	6	3.17	1 AS	43.656982	-79.736499	168
83	Ginkgo	Ginkgo biloba	5.4cm	2.15m	1.68m	9	3	5	2.12	1 AS	43.657112	-79.736637	120
84	Honey locust	Gleditsia triacanthos	7.0cm	3.73m	3.17m	15	-2	5	6.06	1 AS	43.656873	-79.736435	300
85	Honey locust	Gleditsia triacanthos	7.2cm	4.15m	3.62m	14	-1	0	5.34	1 AS	43.656828	-79.736513	87
86	Honey locust	Gleditsia triacanthos	7.4cm	3.86m	3.55m	13	-3	5	5.67	1 AS	43.657042	-79.736221	287
87	Honey locust	Gleditsia triacanthos	7.4cm	3.34m	4.12m	13	-3	0	5.67	1 AS	43.656911	-79.736388	281
88	Honey locust	Gleditsia triacanthos	7.2cm	2.98m	3.38m	15	-7	-4	7.81	1 AS	43.657032	-79.73371	90
89	Honey locust	Gleditsia triacanthos	7.1cm	3.25m	3.35m	14	-8	-5	7.80	1 AS	43.656848	-79.736371	266
90	Honey locust	Gleditsia triacanthos	7.4cm	3.76m	3.70m	15	-3	0	6.41	1 AS	43.656834	-79.736604	285
91	Honey locust	Gleditsia triacanthos	7.0cm	3.22m	2.85m	6	-7	3	4.56	1 AS	43.656829	-79.736493	295
92	Honey locust	Gleditsia triacanthos	7.7cm	3.50m	4.61m	12	0	2	4.25	1 AS	43.656957	-79.736251	246
93	English walnut	Juglans regia	25.2cm	8.85m	6.84m	24	-3	5	9.95	1 AS	43.657013	-79.736122	276
94	English walnut	Juglans regia	26.9cm	8.25m	6.74m	27	-6	6	12.29	1 AS	43.657005	-79.736205	275
95	Chokecherry	Aronia	16.5cm	5.10m	5.72m	10	-1	2	3.88	1 AS	43.657035	-79.736388	271
96	Silver berry	Elaeagnus commutata	9.1cm	2.43m	2.50m	19	0	3	6.89	1 AS	43.65706	-79.736441	261
97	Silver berry	Elaeagnus commutata	9.0cm	2.57m	2.30m	17	-7	3	8.57	1 AS	43.657123	-79.736462	244
98	Silver berry	Elaeagnus commutata	7.7cm	2.45m	2.30m	15	-3	4	6.41	1 AS	43.657145	-79.736527	222
99	Silver berry	Elaeagnus commutata	7.6cm	1.84m	2.04m	10	-1	4	3.88	1 AS	43.657159	-79.736518	217
100	Silver berry	Elaeagnus commutata	8.0cm	2.25m	2.01m	11	-5	5	5.64	1 AS	43.657191	-79.736569	205



101	Silver berry	Elaeagnus commutata	8.5cm	2.36m	2.27m	17	-2	0	6.81	1	AS	43.657081	-79.736735	204
102	Silver berry	Elaeagnus commutata	120cm	8.9m	8.20m	25	-1	3	9.68	1	AS	43.654688	-79.738149	261
103	Dogwood	Cornus	1.15cm	10.34m	8.61m	28	-9	10	13.80	1	AS	43.654407	-79.738751	41 (NE)
104	Dogwood	Cornus	6.4cm	3.49m	3.23m	14	-11	-4	8.87	1	AS	43.655288	-79.737348	145 (SE)
105	Dogwood	Cornus	6.1cm	1.82m	2.5m	10	-5	3	5.28	1	AS	43.555457	-79.737212	346 (N)
106	Dogwood	Cornus	6.5cm	1.96m	1.58m	8	-5	4	4.56	1	AS	43.555456	-79.7369	340 (N)
107	Dogwood	Cornus	6.9cm	2.25m	1.91m	12	-6	6	6.35	1	AS	43.655638	-79.73035	334 (N)
108	Dogwood	Cornus	6.5cm	2.12m	1.85m	10	-6	5	5.63	1	AS	43.655356	-79.737346	330 (NW)
109	Dogwood	Cornus	6.7cm	1.94m	19.1m	7	-4	-1	3.85	1	AS	43.655436	-79.737168	294
110	Dogwood	Cornus	7.0cm	1.71m	1.98m	11	-4	0	5.29	1	AS	43.655677	-79.73725	329
111	Speckled alder	Alnus incana	6.75cm	2.43m	2.25m	10	-1	4	3.88	4	AS	43.655607	-79.73726	320
112	Speckled alder	Alnus incana	7.7cm	2.16m	1.70m	10	-3	3	4.57	4	AS	43.655652	-79.737204	348
113	Speckled alder	Alnus incana	7.8cm	2.42m	2.75m	14	-2	2	5.68	4	AS	43.65572	-79.737492	135
114	Speckled alder	Alnus incana	7.5cm	1.99m	1.71m	13	-4	-1	6.02	4	AS	43.65878	-79.737519	129
115	Speckled alder	Alnus incana	8.1cm	2.65m	2.69m	12	-5	5	6.00	3	AS	43.655696	-79.737585	142
116	Speckled alder	Alnus incana	9.1cm	2.44m	2.43m	17	-4	-2	7.51	3	AS	43.655552	-79.73761	133
117	Speckled alder	Alnus incana	7.4cm	2.98m	3.05m	11	-5	3	5.64	4	AS	43.655651	-79.737731	142
118	Speckled alder	Alnus incana	8.0cm	2.58m	2.71m	14	-5	5	6.74	4	AS	43.6557	-79.737657	212
119	Speckled alder	Alnus incana	8.1cm	2.51m	2.52m	13	-5	4	6.37	4	AS	43.656731	-79.737573	218
120	Speckled alder	Alnus incana	7.3cm	2.77m	2.42m	14	-2	2	5.68	4	AS	43.655728	-79.73766	210
121	Ironwood	Ostrya virginiana	6.4cm	2.51m	3.4m	14	-4	3	6.39	3	AS	43.655343	-79.737747	90
122	Dogwood	Cornus	7.3cm	1.52m	1.80m	13	-3	6	5.67	1	AS	43.655655	-79.736896	135
123	Dogwood	Cornus	7.2cm	2.57m	2.11m	12	-5	0	6.00	1	AS	43.655801	-79.736827	145
124	Dogwood	Cornus	7.2cm	2.7m	2.60m	12	-1	3	4.60	1	AS	43.655884	-79.73684	180
125	Dogwood	Cornus	8.4cm	2.41m	2.19m	13	-7	5	7.07	1	AS	43.655851	-79.736929	200
126	Dogwood	Cornus	6.8cm	2.5m	2.15m	15	-5	-1	7.11	1	AS	43.656122	-79.736497	110
127	Dogwood	Cornus	7.0cm	2.81m	2.24m	12	-4	2	5.65	1	AS	43.656122	-79.736496	125
128	Dogwood	Cornus	6.1cm	2.37m	2.12m	12	-6	3	6.35	1	AS	43.656222	-79.736632	140
129	Dogwood	Cornus	8.3cm	2.88m	2.20m	8	-5	1	4.56	1	AS	43.656183	-79.736524	132
130	Dogwood	Cornus	7.3cm	2.49m	2.26m	8	-4	0	4.21	1	AS	43.656227	-79.736502	145
131	Basswood	Tilia americana	7.0cm	2.35m	2.40m	7	-6	1	4.56	1	AS	43.656248	-79.736523	163
132	Basswood	Tilia americana	6.2cm	1.52m	1.28m	13	-2	2	5.32	1	AS	43.656282	-79.736458	91
133	Basswood	Tilia americana	7.8cm	2.30m	2.34m	11	-5	3	5.64	1	AS	43.656307	-79.736365	85
134	Basswood	Tilia americana	8.3cm	2.15m	2.32m	13	-3	2	5.67	1	AS	43.656292	-79.736365	97
135	Basswood	Tilia americana	8.6cm	2.10m	2.37m	9	-4	3	4.57	1	AS	43.656231	-79.736313	130
136	Basswood	Tilia americana	8.6cm	3.14m	2.95m	14	-3	1	6.03	1	AS	43.656348	-79.736343	140
137	Basswood	Tilia americana	8.8cm	2.42m	1.98m	12	-3	4	5.30	1	AS	43.656421	-79.736308	151
138	Dogwood	Cornus	6.9cm	1.42m	1.28m	13	-6	0	6.72	1	AS	43.656592	-79.736414	156
139	Dogwood	Cornus	7.8cm	1.92m	1.57m	14	-4	4	6.39	1	AS	43.56583	-79.736311	161
140	Dogwood	Cornus	9.4cm	2.65m	2.40m	12	-4	1	5.65	1	AS	43.65656	-79.736314	185
141	Dogwood	Cornus	8.1cm	2.42m	2.20m	9	-4	3	4.57	1	AS	43.656503	-79.736288	208
142	Dogwood	Cornus	8.2cm	2.85m	2.57m	14	-6	1	7.09	1	AS	43.65657	-79.736273	212
143	Dogwood	Cornus	7.8cm	1.9m	2.05m	9	-5	1	4.92	1	AS	43.656588	-79.736248	205
144	Dogwood	Cornus	7.2cm	1.8m	2.17m	8	-4	3	4.21	1	AS	43.656596	-79.73617	167
145	Dogwood	Cornus	7.5cm	2.3m	2.20m	9	-5	2	4.92	1	AS	43.656659	-79.737361	181
146	Dogwood	Cornus	19.3cm	6.45m	7.36m	12	-1	7	4.60	1	AS	43.656609	-79.735028	85
147	Midland Hawthorn	Crataegus rhipidophylla	23.9cm	9.16m	10.29m	24	0	4	8.90	1	AS	43.656691	-79.735053	87
148	Midland Hawthorn	Crataegus rhipidophylla	25.1cm	9.46m	8.53m	21	0	7	7.68	1	AS	43.656666	-79.73573	79
149	Midland Hawthorn	Crataegus rhipidophylla	22.7cm	9.64m	10.1m	21	1	7	7.33	1	AS	43.656653	-79.735147	76
150	Midland Hawthorn	Crataegus rhipidophylla	26.2cm	10.62m	6.80m	28	0	5	10.63	1	AS	43.656716	-79.735186	130

151	Midland Hawthorn	Crataegus rhipidophylla	31.6cm	12.24m	9.73m		31	2	6	11.32	1	AS	43.656686	-79.735371	63
152	Midland Hawthorn	Crataegus rhipidophylla	33.5cm	13.96m	10.56m		33	4	10	11.59	1	AS	43.656783	-79.735302	83
153	Midland Hawthorn	Crataegus rhipidophylla	30.2cm	11.85m	9.67m		45	1	9	19.65	1	AS	43.65681	-79.735313	108
154	Red maple	Acer rubrum	24.7cm	9.72m	9.70m		25	2	11	8.63	1	NL	43.656747	-79.735333	120
155	Red maple	Acer rubrum	34.4cm	12.16m	9.22m		17	-5	3	7.86	1	NL	43.656835	-79.735334	190
156	Red maple	Acer rubrum	42.9cm	14.20m	12.56m		32	-3	2	13.55	2	NL	43.65694	-79.735654	292
157	Red maple	Acer rubrum	28.8cm	11.16m	10.40m		28	-7	1	13.09	2	NL	43.6571	-79.735726	255
158	Red maple	Acer rubrum	40.3cm	12.73m	12.81m		34	-9	2	16.66	2	NL	43.657189	-79.735645	197
159	Silver maple	Acer saccharinum	D1=9.9cm D2=6.5cm D3=7.4cm D4=9.9cm D5=7.1cm D6=7.5cm	7.90m	7.84m		19	10	1	3.36	2	NL	43.657133	-79.735591	149
160	Silver maple	Acer saccharinum	34.4cm	1.60m	1.23m		9	-5	1	4.92	1	NL	43.65712	-79.735605	145
161	Silver maple	Acer saccharinum	35.9cm	8.20m	8.10m		29	-6	0	13.19	1	H	43.657272	-79.735705	280
162	Tamarack	Larix laricina	37.5cm	10.52m	9.85m		34	-6	-3	15.59	2	H	43.657215	-79.735834	178
163	Canadian hemlock	Tsuga canadensis	28.8cm	8.89m	8.75m		37	-7	1	17.53	1	H	43.657333	-79.657333	265
164	Midland Hawthorn	Crataegus rhipidophylla	D1=25.2cm D2=26.2cm	10.82m	9.5m		15	-14	-3	10.35	1	NL	43.657371	-79.735895	250
165	Sugar maple	Acer saccharum	64.4cm	15.24m	18.86m		49	-7	5	25.46	1	NL	43.657336	-79.736019	280
166	Tamarack	Larix laricina	30cm	9.13m	9.74m		23	-7	-2	10.95	1	H	43.657314	-79.735983	247
167	Canadian hemlock	Tsuga canadensis	3.81cm	8.5m	9.31m		23	-5	-3	10.24	2	H	43.657237	-79.736237	325
168	Canadian hemlock	Tsuga canadensis	34.4cm	7.83m	8.80m		22	-4	-1	9.48	2	H	43.657295	-79.735992	320
169	Tamarack	Larix laricina	32.6cm	10.24m	12.59m		31	-8	-4	14.83	1	H	43.65722	-79.73618	220
170	Tamarack	Larix laricina	44.9cm	2.11m	2.34m		9	-7	2	5.62	1	NL	43.657345	-79.73613	208
171	Sugar maple	Acer saccharum	52.2cm	15.58m	13.14m		51	-8	1	27.51	1	NL	43.657393	-79.736164	185
172	Eastern white pine	Pinus strobus	D1=11.3cm D2=7.9cm D3=12.8cm	4.69m	4.60m		9	-7	-5	5.62	1	H	43.657362	-79.736093	146
173	Burning bush	Euonymus alatus	D1=16.3cm D2=9.3cm D3=13.7cm								1		43.657252	-79.73635	
174	Burning bush	Euonymus alatus	D1=15.0cm D2=13.3cm D3=12.4cm	13.60m	13.2m		24	-8	-6	11.72	1	NL	43.657252	-79.73635	170
175	Sugar maple	Acer saccharum	37.6cm	13.83m	11.84m		42	-7	4	20.46	2	H	43.657281	-79.736458	249
176	Sugar maple	Acer saccharum	55.1cm	14.77m	14.1m		31	-5	1	13.77	1	NL	43.657545	-79.73644	233
177	Sugar maple	Acer saccharum	33.3cm	9.60m	11.90m		11	-9	-5	7.06	1	NL	43.657596	-79.736311	207
178	Sugar maple	Acer saccharum	44.9cm	10.42m	10.4m		39	-7	3	18.65	1	NL	43.657547	-79.736327	197
179	Red oak	Quercus rubra	31.7cm	11.6m	11.26m		34	-5	0	15.24	1	NL	43.657537	-79.736489	178
180	Red oak	Quercus rubra	27.3cm	0.86m	0.80m		9	-6	2	5.27	1	NO	43.657579	-79.736469	163
181	Eastern white pine	Pinus strobus	D1=11.2cm D2=9.5cm	4.16m	3.78m		16	-6	0	7.84	1	H	43.657241	-79.735823	190
182	Eastern white pine	Pinus strobus	D1=9.7cm D2=8.9cm D3=7.3cm	4.30m	4.65m		14	-5	-2	6.74	1	H	43.657397	-79.736548	289
183	Eastern white pine	Pinus strobus	D1=8.2cm D2=7.2cm D3=9.5cm	4.96m	4.70m		17	-1	-4	6.46	1	H	43.657434	-79.73673	275
184	White spruce	Picea glauca	24.6cm	6.76m	6.85m		28	-3	-1	11.68	1	H	43.657504	-79.736731	260
185	White spruce	Picea glauca	12.2cm	4.45m	4.52m		11	-6	-2	5.99	1	H	43.657591	-79.736915	233
186	White spruce	Picea glauca	8.5cm	4.41m	4.63m		11	-6	-2	5.99	1	H	43.657592	-79.736915	233
187	Tamarack	Larix laricina	23.8cm	8.36m	7.71m		30	-5	0	13.30	1	H	43.657736	-79.736789	245
188	Tamarack	Larix laricina	5.9cm	6.10m	6.35m		10	-8	-1	6.34	1	NL	43.657724	-79.736763	287
189	Red maple	Acer rubrum	26.9cm	9.83m	8.16m		14	-5	0	6.74	1	NL	43.657698	-79.736655	269
190	Red maple	Acer rubrum	53.4cm	13.49m	14.31m		36	-7	4	16.99	2	NL	43.657809	-79.657782	245
191	Red maple	Acer rubrum	68cm	19.38m	17.37m		41	-7	8	19.84	1	NL	43.657782	-79.736624	154
192	Silver maple	Acer saccharinum	35.4cm	4.16m	5.32m		20	-6	4	9.38	1	NL	43.657789	-79.736646	151
193	Silver maple	Acer saccharinum	11cm	5.28m	6.32m		15	-2	0	6.06	1	NL	43.657729	-79.737034	116
194	Silver maple	Acer saccharinum	D1=8.9cm D2=6.3cm	4.18m	5.77m		13	-12	-8	8.87	1	NL	43.657902	-79.736812	228
195	Silver maple	Acer saccharinum	30.5cm	14.22m	12.68m		30	-10	-3	15.07	1	NL	43.657974	-79.736842	187
196	Silver maple	Acer saccharinum	6.4cm	8.32m	6.28m		14	-5	-2	6.74	1	NL	43.657812	-79.737057	154
197	Tamarack	Larix laricina	23.8cm	8.36m	7.71m		32	-4	0	13.90	1	H	43.657813	-79.737059	248
198	Tamarack	Larix laricina	26.9cm	9.84m	8.32m		41	-8	4	20.20	1	NL	43.657815	-79.73816	270
199	Sugar maple	Acer saccharum	11cm	8.92m	7.39m		14	-5	-2	6.74	2	H	43.657917	-79.738168	188
200	Sugar maple	Acer saccharum	8.9cm	8.37m	7.74m		34	-5	1	15.24	1	H	43.657914	-79.738172	315

# ACER- Tree Mapping & Inventory 2020

TREE NO.	COMMON NAME	SCIENTIFIC NAME	DBH Diameter Tape at 1.3m	CROWN WIDTH (CW)		HEIGHT (Clinometer, Tangent Table, 30 m TAPE)				MULCHING	STATUS	LOCATION		COMPASS BEARING (°)
				CW1	CW2	UPPER ANGLE (°)	LOWER ANGLE (°)	CW DEPTH (°)	TOTAL HEIGHT (m)			HEALTH NOTES	LATITUDE	
1	Midland Hawthorn	Crataegus rhipidophylla	20.5 cm	7.65 m	8.43 m	10	-7	-1	5.98		1 A			210 (S)
2	Midland Hawthorn	Crataegus rhipidophylla	22 cm	7.15 m	8.20 m	12	-8	-4	7.1		1 A			185 (N)
3	Midland Hawthorn	Crataegus rhipidophylla	24.9 cm	7.5 m	9.70 m	12	-6	-1	6.35		1			65 (N)
4	Soft/silver maple	Acer saccharinum	5.0 cm	2.10 m	1.92 m	1	-5	0	2.1		1 A			150 (E)
5	Soft/silver maple	Acer saccharinum	44.2 cm	12.74 m	10.29 m	25	-4	5	10.72		1 A			280 (W)
6	Soft/silver maple	Acer saccharinum	43.4 cm	15.15 m	13.87 m	32	-3	6	13.55		1 A			100 (E)
7	Soft/silver maple	Acer saccharinum	12.4 cm	3.16 m	3.10 m	6	-1	0	2.45		1 D			230 (S)
8	Soft/silver maple	Acer saccharinum	D1=7.0cm D2=7.4cm (D avg.=7.2 cm)	3.19 m	3.30 m	2	-3	-1	1.75		1 A			225 (S)
9	Norway maple	Acer platanoides	D1=9.7cm D2=6.6cm Davg=8.15 cm	4.40 m	4.0 m	2	-5	-2	2.45		1 A			265 (W)
10	Norway maple	Acer platanoides	21.9 cm	5.61 m	5.80 m	14	0	-1	4.99		1 A			170 (S)
11	Norway maple	Acer platanoides	9.8cm	3.45m	3.90m	-5	10	0	-5.28		1 A	43.65619	-79.740347	180 (S)
12	Norway maple	Acer platanoides	9cm	3.94m	3.16m	-5	9	2	-4.92		1 A	43.656238	-79.740276	170 (S)
13	Norway maple	Acer platanoides	13.1cm	3.73m	3.28m	-5	6	-2	-3.85		1 A	43.656199	-79.740632	285 (W)
14	Norway maple	Acer platanoides	12.2cm	4.40m	4.10m	-5	9	0	-4.92		1 A	43.656311	-79.740662	215 (S)
15	Norway maple	Acer platanoides	9.3cm	2.85m	3.92m	-5	2	0	-2.45		1 A	43.656302	-79.740642	150 (S)
16	Norway maple	Acer platanoides	8.9cm	4.3m	2.55m	-8	8	0	-5.62		1 A	43.656378	-79.740763	230 (S)
17	Norway maple	Acer platanoides	10.6cm	3.90m	4.20m	-8	10	0	-6.34		1 A	43.65648	-79.740661	270 (W)
18	Norway maple	Acer platanoides	11.5cm	3.75m	4.5m	-4	5	-2	-3.15		1 A	43.656459	-79.740776	265 (W)
19	Norway maple	Acer platanoides	10.4cm	3.24m	3.75m	-6	10	2	-5.63		1 A	43.656389	-79.741097	280 (W)
20	Norway maple	Acer platanoides	12.5cm	4.53m	4.35m	-6	10	-2	-5.63		1 A	43.65651	-79.74091	170 (S)
21	Norway maple	Acer platanoides	9.0cm	3.77m	3.30m	-6	8	2	-4.91		1 A	43.656475	-79.741119	280 (W)
22	Apple leaf	Philenopter: violaceae	7.5cm	1.70m	1.30m	-4	10	2	-4.93		1 A	43.656489	-79.74105	270 (W)
23	Apricot	Prunus armeniaca	6.1cm	1.40m	2.42m	-8	5	0	-4.56		1 A	43.656473	-79.741085	300 (W)
24	Apricot	Prunus armeniaca	6.2cm	1.75m	1.90m	-8	5	2	-4.56		1 A	43.656522	-79.741142	315 (W)
25	Apricot	Prunus armeniaca	D1=9cm D2=3.1cm D3=3.0cm D4=3.3cm D5=4.0cm	3.0m	2.76m	-6	5	-4	-3.85		1 A	43.656531	-79.741174	320 (W)
26	Red maple	Acer rubrum	8.5cm	1.93m	2.94m	-7	4	-2	-3.85		1 A	43.65665	-79.741026	305 (W)
27	Red maple	Acer rubrum	7.1cm	2.72m	2.54m	-6	5	-2	-3.85		1 D	43.656718	-79.741257	300 (W)
28	Red maple	Acer rubrum	8.0cm	2.69m	2.44m	-5	8	-5	-4.56		1 A	43.656828	-79.74139	270 (W)
29	European ash	Fraxinus excelsior	47.3cm	10.20m	15.30m	-2	27	6	-10.89		1 A	43.656926	-79.742699	93 (E)
30	Soft/silver maple	Acer saccharinum	28.5cm	8m	9.40m	-4	22	4	-9.48		1 A	43.657044	-79.74262	65 (NE)
31	Soft/silver maple	Acer saccharinum	10.2cm	5.98m	6.30m	-4	22	1	-9.48		1 A	43.656983	-79.742591	88 (E)
32	Soft/silver maple	Acer saccharinum	30.3cm	10.70m	12m	-3	25	4	-10.37		1 A	43.656931	-79.74259	107 (E)
33	Soft/silver maple	Acer saccharinum	30.8cm	9.55m	9.25m	-6	16	-2	-7.84		1 A	43.656386	-79.743111	145 (SE)
34	Soft/silver maple	Acer saccharinum	33cm	9.52m	7.9m	-4	24	0	-10.30		1 A	43.656848	-79.742807	135 (S)
35	Japanese tree lilac	Cydonia oblonga	8cm	1.85m	2.5m	-5	9	4	-4.92		1 A	43.656832	-79.742805	128 (SE)
36	Soft/silver maple	Acer saccharinum	37.7cm	10m	10.95m	-6	18	0	-8.60		1 A	43.656795	-79.742784	38 (SE)
37	Soft/silver maple	Acer saccharinum	32.9cm	10.25m	8.67m	-1	23	-1	-8.84		1 A	43.656732	-79.7428	117 (SE)
38	Soft/silver maple	Acer saccharinum	8.4cm	3.36m	3.0m	-4	8	1	-4.21		1 A	43.65677	-79.743026	107 (E)
39	Soft/silver maple	Acer saccharinum	36.4cm	10.70m	8.80m	-4	24	-1	-10.30		1 A	43.6565	-79.7409	123 (SE)
40	Alligator wood	Liquidambar styraciflua	9.5cm	2.82m	3.20m	-2	10	3	-4.22		1 A	43.6566	-79.7429	122 (SE)
41	Soft/silver maple	Acer saccharinum	D1=6.7cm D2=14.8cm	5.19m	3.75m	-6	12	-3	-6.35		1 D	43.6567	-79.7431	124 (SE)
42	Soft/silver maple	Acer saccharinum	31.8cm	8.2m	10.2m	-2	20	8	-7.98		1 A	43.6566	-79.7431	110 (E)
43	Alligator wood	Liquidambar styraciflua	D1=5.0cm D2=8.4cm	3.25m	2.76m	-6	6	-3	-4.20		1 A	43.6565	-79.7431	89 (E)
44	Southern catalpa	Catalpa bignonioides	21.5cm	5.95m	6.20m	-6	23	-3	-10.59		1 A	43.6563	-79.7431	94 (E)
45	Norfolk island pine	Araucaria heterophylla	22.5cm	4.40m	5.40m	-6	22	-3	-10.18		1 A	43.6563	-79.7428	75 (E)
46	Soft/silver maple	Acer saccharinum	37.9cm	9.55m	9.60m	-3	24	0	-9.95		1 A	43.6565	-79.7426	
47	Red Oak	Quercus rubra	28.1cm	6.80m	7.80m	-10	15	-3	-8.89		1 A	43.6561	-79.743	59 (NE)
48	Soft/silver maple	Acer saccharinum	32.8cm	9.20m	7.55m	-7	19	2	-9.34		1 D	43.6561	-79.7428	9 (N)
49	Norway spruce	Picea abies	30.8cm	7m	6.05m	5	-5	2	3.50		1 A	43.656	-79.7423	120 (SE)
50	Norway spruce	Picea abies	32.9cm	7.4m	7.4m	20	-5	8	9.03		1 A	43.656	-79.7422	128 (SE)

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51	Norway spruce	Picea abies	23.5cm	6m	4.35m	24	-2	2	9.60	1 A	43.6558	-79.7421	115 (SE)
52	Ash leaf maple	Acer negundo	25.5cm	6.5m	5.6m	15	-7	-2	7.81	1 A	43.6557	-79.7421	328 (NE)
53	Ash leaf maple	Acer negundo	30.6cm	8.4m	7.7m	21	-4	-2	9.08	1 A	43.6556	-79.7421	349 (N)
54	Alligator wood	Liquidambar styraciflua	36.4cm	10.95m	11.65m	25	-5	6	11.08	1 A	43.6557	-79.7421	325 (NW)
55	Soft/silver maple	Acer saccharinum	40.5cm	13.35m	9.65m	25	-7	3	11.78	1 A	43.6558	-79.7422	113 (NW)
56	Alligator wood	Liquidambar styraciflua	35.7cm	8m	8.7m	22	-6	4	10.18	1 A	43.6558	-79.7422	306 (NW)
57	Soft/silver maple	Acer saccharinum	28.8cm	7.2m	7.7m	22	-1	-5	8.43	1 A	43.6559	-79.7423	120 (NW)
58	Oriental plane	Platanus orientalis	22.2cm	5.95m	6.85m	16	-3	2	6.78	1 A	43.6558	-79.7424	347 (N)
59	Oriental plane	Platanus orientalis	34.2cm	9.3m	7.5m	21	-6	0	9.78	1 A	43.6559	-79.7425	355 (N)
60	Alligator wood	Liquidambar styraciflua	20.8cm	6.55m	5.65m	14	-10	-4	8.51	1 A	43.656	-79.7425	348 (N)
61	Soft/silver maple	Acer saccharinum	29.9cm	7.8m	10.1m	12	-9	-1	7.42	1 A	43.656	-79.7427	15 (N)
62	Soft/silver maple	Acer saccharinum	26.5cm	8.1m	6.8m	15	-14	-4	10.35	1 A	43.656	-79.7427	56 (NE)
63	Soft/silver maple	Acer saccharinum	5.8cm	0.6m	0.75m	7	-3	0	3.50	1 AS	43.6554	-79.742	150 (SE)
64	Soft/silver maple	Acer saccharinum	8.5cm	1.80m	2.60m	1	-4	0	1.75	1 AS	43.6554	-79.7418	117 (SE)
65	Small leaf lime	Tilia cordata	9.2cm	1.65m	2.50m	10	-4	-3	4.93	1 AS	43.6553	-79.7417	81 (E)
66	Small leaf lime	Tilia cordata	48.3cm	12.40m	16.50m	26	-10	1	13.28	1 BS	43.6554	-79.7416	94 (E)
67	Small leaf lime	Tilia cordata	42.6cm	12.45m	9.75m	28	-5	-1	12.38	1 BS/ BD	43.6552	-79.7415	79 (E)
68	Soft/silver maple	Acer saccharinum	53.5cm	11.45m	10.60m	35	-5	-3	15.75	1 AS	43.6553	-79.7415	150 (SE)
69	Small leaf lime	Tilia cordata	7.0cm	1.85m	2.55m	4	-4	-2	2.80	1 AS	43.6552	-79.7416	116 (SE)
70	Small leaf lime	Tilia cordata	6.8cm	1.30m	1.35m	5	-7	-2	4.21	1 AS	43.6551	-79.7416	87 (E)
71	Small leaf lime	Tilia cordata	5.4cm	1.30m	1.20m	5	-10	-3	5.28	1 AS	43.655	-79.7411	56 (NE)
72	Red maple	Acer rubrum	7.9cm	2.50m	2.65m	11	0	2	3.89	1 AS	43.6555	-79.7417	72 (E)
73	Red maple	Acer rubrum	6.4cm	0.75m	0.75m	10	-4	1	4.93	1 AS	43.6556	-79.7415	107 (E)
74	Red maple	Acer rubrum	8.2cm	2.15m	2.25m	5	-7	0	4.21	1 AS	43.6557	-79.7416	146 (SE)
75	Red maple	Acer rubrum	5.8cm	0.80m	0.73m	5	0	0	1.75	1 As	43.6559	-79.7414	167 (S)
76	Red oak	Quercus rubra	7.2cm	1.10m	1.45m	8	-6	-3	4.91	1	43.656	-79.7412	188 (S)
77	Red oak	Quercus rubra	5.3cm	0.60m	0.70m	2	-6	-3	2.80	1 BS	43.6561	-79.7411	136 (SE)
78	Red oak	Quercus rubra	7.1cm	1.65m	1.70m	14	-6	-3	7.09	1 AS	43.6562	-79.741	148
79	Soft/silver maple	Acer saccharinum	13.9cm	4.05m	3.75m	11	-5	2	5.64	1 AS	43.6565	-79.7405	338 (N)
80	Soft/silver maple	Acer saccharinum	9.0cm	2.60m	3.80m	8	-4	0	4.21	1 AS	43.6565	-79.7404	316 (NW)
81	Soft/silver maple	Acer saccharinum	7.0cm	2.0m	2.40m	5	-7	-4	4.21	1 AS	43.6566	-79.7407	345 (N)
82	Japanese tree lilac	Cydonia oblonga	D1=10.5cm D2=3.7cm D3=2.9cm	2.75m	2.05m	4	-7	-3	3.85	1 AS	43.657	-79.7415	133 (SE)
83	Japanese tree lilac	Cydonia oblonga	11.3cm	2.55m	2.20m	5	-8	-3	4.56	1 AS	43.6572	-79.7413	147 (SE)
84	Japanese tree lilac	Cydonia oblonga	9.5cm	2.50m	2.70m	8	-9	-2	5.98	1 AS	43.6569	-79.7419	109 (E)
85	Japanese tree lilac	Cydonia oblonga	D1=5.4cm D2=4.6cm D3=3.1cm	2.80m	3.0m	7	-3	-2	3.50	1 AS	43.657	-79.7416	130 (SE)
86	Japanese tree lilac	Cydonia oblonga	D1=7.0cm D2=7.0cm D3=4.3cm D4=7.1cm	2.90m	2.70m	2	-7	-5	3.15	1 AS	43.6572	-79.7416	176 (S)
87	Japanese tree lilac	Cydonia oblonga	11.01cm	2.95m	2.50m	7	-7	-1	4.91	1 AS	43.6572	-79.7417	175 (S)
88	Red soft maple	Acer rubrum	10cm	2.20m	2.50m	7	-7	-2	4.91	1 AS	43.6571	-79.7415	137 (SE)
89	Red soft maple	Acer rubrum	9.0cm	2.28m	2.85m	0	-5	-1	1.75	1 AS	43.657	-79.7413	133 (SE)
90	Soft/silver maple	Acer saccharinum	10.5cm	2.90m	2.85m	10	-6	-1	5.63	1 AS	43.6573	-79.7417	308 (NW)
91	Honey locust	Gleditsia triacanthos	16.4cm	4.80m	4.50m	10	-6	-4	5.63	1 AS	43.6561	-79.7397	186 (S)
92	Soft/silver maple	Acer saccharinum	16.1cm	4.40m	4.80m	13	-3	1	5.67	1 AS	43.656	-79.7398	125 (SE)
93	Red oak	Quercus rubra	18.0cm	4.40m	4.40m	21	-4	2	9.08	1 AS	43.6559	-79.7401	90 (E)
94	Red oak	Quercus rubra	12.8cm	4.50m	3.95m	13	-4	2	6.02	1 BS	43.6561	-79.74	157 (S)
95	Japanese tree lilac	Cydonia oblonga	D1=9.2cm D2=5.6cm D3=4.9cm D4=6.2cm D5=10.6cm	5.10m	3.50m	6	-5	-4	3.85	1 AS	43.6558	-79.7396	153 (SE)
96	Japanese tree lilac	Cydonia oblonga	D1=10.9cm D2=9.5cm	4.50m	4.0m	15	-8	-6	8.17	1 AS	43.6559	-79.7396	157 (S)
97	Japanese tree lilac	Cydonia oblonga	D1=8.0cm D2=13.8cm	5.60m	4.30m	13	-17	-4	10.73	1 AS	43.6559	-79.7395	222 (S)
98	Japanese tree lilac	Cydonia oblonga	D1=12.2cm D2=10.9cm D3=10.3cm D4=7.4cm D5=8.5cm	6.05m	5.33m	9	-4	-3	4.57	1 AS	43.6558	-79.7396	148 (SE)
99	Japanese tree lilac	Cydonia oblonga	D1=12.0cm D2=6.4cm	3.85m	4.08m	13	-6	-5	6.72	1 AS	43.6559	-79.7394	182 (S)
100	Japanese tree lilac	Cydonia oblonga	D1=10.0cm D2=8.6cm D3=10.0cm	3.53m	3.50m	11	-7	-7	6.34	1 AS	43.6558	-79.7395	168 (S)

101	Japanese tree lilac	Cydonia oblonga	D1=14.6cm D2=14.3cm	3.40m	5.75m	11	-6	-5	5.99	1	AS	43.6543	-79.7382	163 (S)
102	Japanese tree lilac	Cydonia oblonga	D1=9.6cm D2=8.2cm	4.90m	3.0m	11	-6	-5	5.99	1	AS	43.6542	-79.7384	
103	Japanese tree lilac	Cydonia oblonga	D1=8.3cm D2=8.5cm D3=10.5cm D4=10.6cm	4.56m	5.40m	11	-6	-5	5.99	1	AS	43.6543	-79.7383	
104	Japanese tree lilac	Cydonia oblonga	3.5cm	0.90m	0.95m	-4	9	5	-4.57	1	AS	43.655	-79.7391	206 (SW)
105	Japanese tree lilac	Cydonia oblonga	3.2cm	0.87m	1.0m	-3	8	5	-3.86	1	AS	43.6549	-79.7392	211 (SW)
106	Japanese tree lilac	Cydonia oblonga	3.3cm	0.56m	0.60m	-2	5	3	-2.45	1	AS	43.6549	-79.7392	208 (SW)
107	Japanese tree lilac	Cydonia oblonga	3.1cm	0.65m	0.75m	-5	5	-2	-3.50	1	AS	43.6549	-79.7392	205 (SW)
108	Japanese tree lilac	Cydonia oblonga	3.6cm	0.65m	0.70m	-4	9	3	-4.57	1	AS	43.6548	-79.7393	211 (SW)
109	Japanese tree lilac	Cydonia oblonga	2.9cm	0.65m	0.50m	0	5	1	-1.75	1	AS	43.6547	-79.7392	206 (SW)
110	European hornbeam	Carpinus betulus	3.0cm	0.53m	0.47m	-3	9	1	-4.22	1	AS	43.6548	-79.7393	203 (SW)
111	European hornbeam	Carpinus betulus	2.9cm	0.56m	0.79m	0	4	2	-1.40	1	AS	43.6548	-79.7393	210 (SW)
112	European hornbeam	Carpinus betulus	3.3cm	0.57m	0.72m	0	6	0	-2.10	1	AS	43.6548	-79.7394	209 (SW)
113	European hornbeam	Carpinus betulus	3.8cm	0.57m	0.70m	-4	1	1	-1.75	1	AS	43.6548	-79.7394	206 (SW)
114	European hornbeam	Carpinus betulus	3.5cm	0.73m	0.72m	-4	5	0	-3.15	2	AS	43.6547	-79.7395	215 (SW)
115	European hornbeam	Carpinus betulus	3.2cm	0.62m	0.53m	-6	5	-5	-3.85	2	AS	43.6548	-79.7395	204 (SW)
116	European hornbeam	Carpinus betulus	3.6cm	0.62m	0.54m	-3	8	-3	-3.86	4	AS	43.6547	-79.7395	204 (SW)
117	European hornbeam	Carpinus betulus	3.4cm	0.70m	0.90m	-6	4	-4	-3.50	4	AS	43.6547	-79.7395	207 (SW)
118	Red oak	Quercus rubra	2.2cm	1.0m	0.80m	-5	12	0	-6.00	4	AL	43.6547	-79.7396	208 (SW)
119	Red oak	Quercus rubra	2.4cm	1.1m	1.05m	-5	8	1	-4.56	2	AL	43.6546	-79.7397	208 (SW)
120	Red oak	Quercus rubra	2.5cm	0.80m	1.70m	-4	5	4	-3.15	2	AL	43.6546	-79.7397	206 (SW)
121	European hornbeam	Carpinus betulus	2.2cm	0.72m	0.60m	-5	9	-2	-4.92	4	AS	43.6546	-79.7398	206 (SW)
122	European hornbeam	Carpinus betulus	3.0cm	0.65m	0.70m	-5	5	2	-3.50	2	AS	43.6545	-79.7398	202 (SW)
123	European hornbeam	Carpinus betulus	3.0cm	0.67m	0.55m	-1	6	-4	-2.45	2	AS	43.6546	-79.7398	119 (SW)
124	Japanese tree lilac	Cydonia oblonga	3.1cm	0.79m	0.73m	-2	4	2	-2.10	2	AS	43.6546	-79.7399	210 (SW)
125	Japanese tree lilac	Cydonia oblonga	3.6cm	0.66m	0.55m	-4	8	0	-4.21	2	AS	43.6545	-79.7399	211 (SW)
126	Japanese tree lilac	Cydonia oblonga	3.7cm	0.65m	0.65m	-3	5	2	-2.80	2	AS	43.6545	-79.7399	206 (SW)
127	European hornbeam	Carpinus betulus	3.5cm	0.76m	0.65m	-5	10	-1	-5.28	2	AS	43.6545	-79.7399	210 (SW)
128	European hornbeam	Carpinus betulus	3.3cm	0.60m	0.45m	-5	7	-3	-4.21	2	AS	43.6544	-79.7399	208 (SW)
129	European hornbeam	Carpinus betulus	3.2cm	0.65m	0.65m	-3	7	-2	-3.50	2	AS	43.6544	-79.7399	206 (SW)
130	Japanese tree lilac	Cydonia oblonga	4.0cm	0.60m	0.72m	-2	5	0	-2.45	2	AS	43.6544	-79.74	210 (SW)
131	Japanese tree lilac	Cydonia oblonga	3.4cm	0.70m	0.66m	-4	6	0	-3.50	2	AS	43.6544	-79.74	208 (SW)
132	Japanese tree lilac	Cydonia oblonga	4.8cm	0.87m	0.65m	-3	5	-1	-2.80	2	AS	43.6544	-79.7401	211 (SW)
133	Japanese tree lilac	Cydonia oblonga	3.0cm	0.66m	0.67m	-6	7	0	-4.56	2	AS	43.6543	-79.74	202 (SW)
134	Japanese tree lilac	Cydonia oblonga	3.2cm	0.83m	0.85m	-6	5	-1	-3.85	1	AS	43.6544	-79.74	250 (SW)
135	Japanese tree lilac	Cydonia oblonga	20cm	3.75m	4.2m	0	24	7	-8.90	1	AS	43.6544	-79.74	188 (S)
136	Japanese tree lilac	Cydonia oblonga	27cm	4.30m	6.0m	-3	22	10	-9.13	1	AS	43.6542	-79.7395	193 (S)
137	Japanese tree lilac	Cydonia oblonga	19.5cm	3.53m	4.55m	-3	23	7	-9.54	1	AS	43.6542	-79.7395	195 (S)
138	Japanese tree lilac	Cydonia oblonga	41cm	8.50m	10m	-12	23	1	-12.74	1	AS	43.6543	-79.7394	147 (SE)
139	Japanese tree lilac	Cydonia oblonga	33cm	4.95m	9.50m	-9	27	0	-13.36	1	AS	43.6542	-79.7395	142 (SE)
140	Japanese tree lilac	Cydonia oblonga	30.9cm	8.20m	8.39m	-9	32	0	-15.67	1	AS	43.6544	-79.7394	164 (S)
141	Japanese tree lilac	Cydonia oblonga	44.9cm	9.8m	7.55m	-8	24	-1	-11.72	1	AS	43.6543	-79.7393	173 (S)
142	Japanese tree lilac	Cydonia oblonga	37.4cm	11.26m	9.11m	-6	25	0	-11.43	1	AS	43.6545	-79.7389	226 (SW)
143	Japanese tree lilac	Cydonia oblonga	36.8cm	9.70m	9.26m	-5	20	3	-9.03	1	AS	43.6544	-79.739	220 (SW)
144	Norway maple	Acer platanoides	36cm	8.70m	7.90m	-5	25	0	-11.08	1	AS	43.6544	-79.7389	229 (SW)
145	Soft/silver maple	Acer saccharinum	31.3cm	10.35m	7.60m	-2	26	1	-10.45	1	AS	43.6543	-79.7392	59 (NE)
146	Red maple	Acer rubrum	40.2cm	11.20m	11.75m	-4	24	1	-10.30	1	AS	43.6542	-79.7392	31 (NE)
147	Soft/silver maple	Acer saccharinum	26.5cm	7.35m	7.20m	-5	22	0	-9.83	1	AS	43.6541	-79.7393	24 (NE)
148	Soft/silver maple	Acer saccharinum	26.6cm	8.25m	7.96m	-5	19	4	-8.64	1	AS	43.6541	-79.7394	15 (N)
149	Soft/silver maple	Acer saccharinum	26.5cm	7.20m	5.8m	-5	20	4	-9.03	1	AS	43.654	-79.7394	28 (NE)
150	Soft/silver maple	Acer saccharinum	42.6cm	7.19m	8.70m	-3	25	1	-10.37	1	AS	43.654	-79.7396	35 (NE)

151	Honey locust	Gleditsia triacanthos	29.5cm	7.90m	6.65m	24	-5	5	10.65	1	AS	43.6538	-79.7397	87 (E)
152	Soft/silver maple	Acer saccharinum	29.8cm	8.0m	8.30m	19	-1	6	7.24	1	AS	43.6538	-79.7396	98 (E)
153	European ash	Fraxinus excelsior	21.6cm	5.65m	6.16m	17	-3	-1	7.16	1	AS	43.6539	-79.7395	94 (E)
154	Soft/silver maple	Acer saccharinum	36.8cm	8.15m	9.90m	20	-2	0	7.98	1	AS	43.6539	-79.7393	81 (E)
155	Soft/silver maple	Acer saccharinum	35.5cm	10.50m	8.45m	20	-5	0	9.03	1	AS	43.654	-79.7394	91 (E)
156	European ash	Fraxinus excelsior	35.9cm	8.75m	10.10m	23	-1	3	8.84	1	AL	43.6541	-79.7392	72 (E)
157	Red oak	Quercus rubra	30.5cm	8.32m	9.53m	30	0	4	11.55	1	AS	43.6542	-79.7391	57 (NE)
158	Soft/silver maple	Acer saccharinum	36.0cm	7.76m	8.2m	30	-1	6	11.90	1	AS	43.6541	-79.739	37 (NE)
159	Soft/silver maple	Acer saccharinum	30.6cm	9.10m	6.90m	26	0	4	9.75	1	AL	43.6541	-79.7391	39 (NE)
160	Soft/silver maple	Acer saccharinum	29.6cm	7.60m	7.45m	29	-4	4	12.48	1	AS	43.654	-79.7391	73 (E)
161	Buttonball maple	Platanus occidentalis	39.5cm	9.60m	8.52m	26	-5	6	11.50	1	AL	43.654	-79.7391	47 (NE)
162	Soft/silver maple	Acer saccharinum	29.9cm	9.40m	9.43m	31	-4	1	13.42	1	AS	43.654	-79.7391	15 (N)
163	Soft/silver maple	Acer saccharinum	26.0cm	7.85m	8.31m	20	-4	0	8.68	1	AS	43.6539	-79.7393	36 (NE)
164	Soft/silver maple	Acer saccharinum	34.0cm	7.12m	8.30m	31	0	4	12.02	1	AS	43.6539	-79.7393	30 (NE)
165	Soft/silver maple	Acer saccharinum	28.5cm	6.55m	6.10m	26	-1	3	10.10	1	AS	43.6537	-79.7395	59 (NE)
166	Red maple	Acer rubrum	4.7cm	1.60m	1.58m	6	-1	3	2.45	1	AS	43.6534	-79.7393	312 (NW)
167	Red maple	Acer rubrum	5.0cm	1.70m	1.85m	6	-1	3	2.45	1	AS	43.6534	-79.7393	314 (NW)
168	Red maple	Acer rubrum	10.8cm	3.48m	3.20m	6	-1	1	2.45	1	AS	43.6534	-79.7392	307 (NW)
169	Red maple	Acer rubrum	8.5cm	3.30m	3.64m	11	-4	-2	5.29	1	AS	43.6533	-79.7392	317 (NW)
170	Red oak	Quercus rubra	5.0cm	3.16m	4.2m	12	-3	-1	5.30	1	AS	43.6533	-79.7391	318 (NW)
171	Red maple	Acer rubrum	5.8cm	1.75m	1.62m	6	-6	-3	4.20	1	AS	43.6533	-79.739	312 (NW)
172	Red maple	Acer rubrum	5.0cm	1.93m	2.10m	5	-1	0	2.10	1	AS	43.6532	-79.7389	330 (NW)
173	Red maple	Acer rubrum	31.1cm	7.34m	6.66m	23	0	3	8.49	1	AS	43.6532	-79.7388	336 (NW)
174	Norway maple	Acer platanoides	36.5cm	8.3m	8.9m	25	-4	0	10.72	1	AS	43.6531	-79.7387	333 (NW)
175	Norway maple	Acer platanoides	37.3cm	8.62m	8.95m	19	-4	0	8.29	1	AS	43.653	-79.7386	339 (N)
176	Japanese tree lilac	Syringa reticulata	3.3cm	0.92m	0.91m	-3	4	2	-2.45	1	AS	43.6547	-79.7388	257 (W)
177	Japanese tree lilac	Syringa reticulata	3.7cm	0.85m	0.87m	-6	4	-1	-3.5	1	AS	43.6547	-79.7389	258 (W)
178	Japanese tree lilac	Syringa reticulata	3.5cm	0.80m	0.83m	-3	3	1	-2.1	1	AS	43.6547	-79.7389	252 (W)
179	Japanese tree lilac	Syringa reticulata	3.4cm	0.65m	0.66m	-6	1	0	-2.45	1	AS	43.6547	-79.7388	255 (W)
180	Japanese tree lilac	Syringa reticulata	3.7cm	0.64m	0.67m	-6	1	-1	-3.5	1	AS	43.6546	-79.739	253 (W)
181	Japanese tree lilac	Syringa reticulata	2.9cm	0.80m	0.82m	-3	3	0	-2.1	1	AS	43.6546	-79.739	253 (W)
182	Japanese tree lilac	Syringa reticulata	2.9cm	0.78m	0.84m	-3	4	0	-2.45	1	AS	43.6546	-79.7391	38 (NE)
183	Japanese tree lilac	Syringa reticulata	3.1cm	0.62m	0.65m	-5	3	0	-2.45	1	AS	43.6546	-79.739	39 (NE)
184	Japanese tree lilac	Syringa reticulata	3.5cm	0.90m	0.94m	-1	4	-1	-2.1	1	AS	43.6545	-79.739	38 (NE)
185	Japanese tree lilac	Syringa reticulata	3.3cm	0.92m	0.91m	-5	3	1	-2.45	1	AL	43.6545	-79.7391	40 (NE)
186	Japanese tree lilac	Syringa reticulata	3.7cm	1.02m	1.05m	-2	5	0	-2.8	1	AS	43.6545	-79.739	41 (NE)
187	Japanese tree lilac	Syringa reticulata	3.1cm	1.20m	1.22m	-2	0	-1	-1.75	1	AS	43.6545	-79.7391	34 (NE)
188	Japanese tree lilac	Syringa reticulata	3.2cm	0.70m	0.73m	-4	1	0	-2.8	1	AS	43.6545	-79.7392	43 (NE)
189	Japanese tree lilac	Syringa reticulata	3.4cm	0.74m	0.72m	-5	1	-1	-2.45	1	AS	43.6545	-79.7391	39 (NE)
190	Red maple	Acer rubrum	2.1cm	1.05m	1.19m	-3	2	0	-1.75	1	AS	43.6545	-79.7392	41 (NE)
191	Japanese tree lilac	Syringa reticulata	2.2cm	1.50m	1.20m	-3	1	0	-1.4	1	AS	43.6544	-79.7393	39 (NE)
192	Japanese tree lilac	Syringa reticulata	2.4cm	1.63m	1.68m	-5	7	-2	-4.21	1	AL	43.6543	-79.7394	43 (NE)
193	Japanese tree lilac	Syringa reticulata	3.6cm	0.60m	0.63m	-2	5	1	-2.45	1	AS	43.6544	-79.7394	40 (NE)
194	Japanese tree lilac	Syringa reticulata	3.3cm	0.58m	0.55m	-6	3	0	-3.15	1	AS	43.6543	-79.7394	39 (NE)
195	Japanese tree lilac	Syringa reticulata	3.0cm	0.54m	0.58m	-5	4	0	-3.15	1	AS	43.6543	-79.7393	38 (NE)
196	Japanese tree lilac	Syringa reticulata	3.2cm	0.66m	0.67m	-5	5	1	-3.5	1	AS	43.6543	-79.7394	35 (NE)
197	Japanese tree lilac	Syringa reticulata	3.5cm	0.72m	0.78m	-2	3	0	-1.75	1	AS	43.6543	-79.7395	37 (NE)
198	Japanese tree lilac	Syringa reticulata	3.2cm	0.62m	0.68m	-5	4	2	-3.15	1	AL	43.6544	-79.7395	38 (NE)
199	Japanese tree lilac	Syringa reticulata	3.6cm	0.64m	0.70m	-3	1	0	-1.4	1	AS	43.6542	-79.7395	40 (NE)
200	Japanese tree lilac	Syringa reticulata	3.4cm	0.80m	0.83m	-5	4	0	-3.15	1	AS	43.6542	-79.7396	43 (NE)
201	Japanese tree lilac	Syringa reticulata	3.3cm	0.53m	0.62m	-4	1	0	-1.75	1	AS	43.6542	-79.7395	37 (NE)
202	Japanese tree lilac	Syringa reticulata	3.7cm	0.62m	0.65m	-4	1	-1	-1.75	1	AL	43.6543	-79.7395	39 (NE)
203	Japanese tree lilac	Syringa reticulata	3.8cm	1.23m	1.30m	-6	3	-1	-3.15	1	AS	43.6542	-79.7396	37 (NE)
204	Japanese tree lilac	Syringa reticulata	3.7cm	0.72m	0.73m	-3	4	-1	-2.45	1	AS	43.6542	-79.7397	41 (NE)
205	Japanese tree lilac	Syringa reticulata	3.5cm	1.32m	1.30m	-5	5	0	-3.5	1	AS	43.6542	-79.7397	37 (NE)
206	Japanese tree lilac	Syringa reticulata	3.4cm	1.25m	1.33m	-1	8	0	-3.16	1	AS	43.6541	-79.7397	43 (NE)

Carbon calculations

TREE NO.	COMMON NAME	SCIENTIFIC NAME	DBH	ALLOMETRIC COEFFICIENTS			CARBON STORED (M=a (D) <sup>b</sup> tons)	AMOUNT OF CO <sub>2</sub> ABSORBED (tons)
			Diameter Tape at 1.3m	a	b	(D) <sup>a</sup> b		
1	Midland Hawthorn	Crataegus rhipidophylla	20.5 cm	0.08	2.63	2817.8161	0.23	1
2	Midland Hawthorn	Crataegus rhipidophylla	22 cm	0.08	2.63	3392.9046	0.27	1
3	Midland Hawthorn	Crataegus rhipidophylla	24.9 cm	0.08	2.63	4698.9874	0.38	1
4	Soft/silver maple	Acer saccharinum	5.0 cm	0.21	2.53	58.667031	0.01	0.05
5	Soft/silver maple	Acer saccharinum	44.2 cm	0.21	2.53	14551.854	3	11
6	Soft/silver maple	Acer saccharinum	43.4 cm	0.21	2.53	13894.695	3	11
7	Soft/silver maple	Acer saccharinum	12.4 cm	0.21	2.53		0.123	0.45
8	Soft/silver maple	Acer saccharinum	D1=7.0cm D2=7.4cm (D avg.=7.2 cm)	0.21	2.53		0.031	0.11
9	Norway maple	Acer platanoides	D1=9.7cm D2=6.6cm Davg=8.15 21.9 cm	0.21	2.53		0.042	0.15
10	Norway maple	Acer platanoides	9.8cm	0.21	2.53		0.52	2
11	Norway maple	Acer platanoides	9cm	0.21	2.53		0.068	0.25
12	Norway maple	Acer platanoides	9cm	0.21	2.53		0.055	0.2
13	Norway maple	Acer platanoides	13.1cm	0.21	2.53		0.141	0.52
14	Norway maple	Acer platanoides	12.2cm	0.21	2.53		0.00012	0.00044
15	Norway maple	Acer platanoides	9.3cm	0.21	2.53		0.059	0.22
16	Norway maple	Acer platanoides	8.9cm	0.21	2.53		0.053	0.2
17	Norway maple	Acer platanoides	10.6cm	0.21	2.53		0.0825	0.3
18	Norway maple	Acer platanoides	11.5cm	0.21	2.53		0.101	0.4
19	Norway maple	Acer platanoides	10.4cm	0.21	2.53		0.079	0.3
20	Norway maple	Acer platanoides	12.5cm	0.21	2.53		0.125	0.46
21	Norway maple	Acer platanoides	9.0cm	0.21	2.53		0.055	0.2
22	Apple leaf	Philenopteris violaceae	7.5cm	0.21	2.53	163.64585	0.034	0.13
23	Apricot	Prunus armeniaca	6.1cm	0.16	2.19	52.465322	0.008	0.031
24	Apricot	Prunus armeniaca	6.2cm	0.16	2.19	54.367304	0.009	0.032
25	Apricot	Prunus armeniaca	D1=9cm D2=3.1cm D3=3.0cm D4=3.3cm D(average)=4.48 D5=4.0cm	0.16	2.19	26.686944	0.004	0.02
26	Red maple	Acer rubrum	8.5cm	0.09	2.51		0.019	0.07
27	Red maple	Acer rubrum	7.1cm	0.09	2.51		0.012	0.044
28	Red maple	Acer rubrum	8.0cm	0.09	2.51		0.017	0.06
29	European ash	Franxinus excelsior	47.3cm	0.16	2.35		1.4	5
30	Soft/silver maple	Acer saccharinum	28.5cm	0.21	2.53		1	3.67
31	Soft/silver maple	Acer saccharinum	10.2cm	0.21	2.53		0.075	0.3
32	Soft/silver maple	Acer saccharinum	30.3cm	0.21	2.53		1.2	4
33	Soft/silver maple	Acer saccharinum	30.8cm	0.21	2.53		1.2	4
34	Soft/silver maple	Acer saccharinum	33cm	0.21	2.53		1.5	6
35	Japanese tree lilac	Cydonia oblonga	8cm	0.21	2.53	192.67158	0.04	0.15
36	Soft/silver maple	Acer saccharinum	37.7cm	0.21	2.53		2	7
37	Soft/silver maple	Acer saccharinum	32.9cm	0.21	2.53		1.5	6
38	Soft/silver maple	Acer saccharinum	8.4cm	0.21	2.53		0.046	0.2
39	Soft/silver maple	Acer saccharinum	36.4cm	0.21	2.53		2	7
40	Alligator wood	Liquidambar styraciflua	9.5cm	0.08	2.63	177.32268	0.014	0.05
41	Soft/silver maple	Acer saccharinum	D1=6.7cm D2=14.8cm	0.21	2.53		0.085	0.3
42	Soft/silver maple	Acer saccharinum	31.8cm	0.21	2.53		1	5
43	Alligator wood	Liquidambar styraciflua	D1=5.0cm D2=8.4cm	0.08	2.63	123.01817	0.010	0.04
44	Southern catalpa	Catalpa bignonioides	21.5cm	0.21	2.53	2350.0078	0.49	2
45	Norfolk island pine	Araucaria heterophylla	22.5cm	0.16	2.14	782.83564	0.13	0.5
46	Soft/silver maple	Acer saccharinum	37.9cm	0.21	2.53		2	7
47	Red oak	Quercus rubra	28.1cm	0.11	2.46		0.403	1.5
48	Soft/silver maple	Acer saccharinum	32.8cm	0.21	2.53		1	5
49	Norway spruce	Picea abies	30.8cm	0.21	2.53	5834.8986	1	4
50	Norway spruce	Picea abies	32.9cm	0.21	2.53	6894.5452	1	5

51	Norway spruce	Picea abies	23.5cm	0.21	2.53	2943.0775	0.62	2
52	Ash leaf maple	Acer negundo	25.5cm	0.21	2.53		0.76	3
53	Ash leaf maple	Acer negundo	30.6cm	0.21	2.53		1	4
54	Alligator wood	Liquidambar styraciflua	36.4cm	0.08	2.63	12755.475	1	4
55	Soft/silver maple	Acer saccharinum	40.5cm	0.21	2.53		2	9
56	Alligator wood	Liquidambar styraciflua	35.7cm	0.08	2.63	12120.413	0.97	4
57	Soft/silver maple	Acer saccharinum	28.8cm	0.21	2.53		1	4
58	Oriental plane	Platanus orientalis	22.2cm	0.21	2.53	2548.4319	0.54	2
59	Oriental plane	Platanus orientalis	34.2cm	0.21	2.53	7604.7694	2	6
60	Alligator wood	Liquidambar styraciflua	20.8cm	0.08	2.63	2927.5652	0.23	1
61	Soft/silver maple	Acer saccharinum	29.9cm	0.21	2.53		1	4
62	Soft/silver maple	Acer saccharinum	26.5cm	0.21	2.53		0.838	3
63	Soft/silver maple	Acer saccharinum	5.8cm	0.21	2.53		0.018	0.07
64	Soft/silver maple	Acer saccharinum	8.5cm	0.21	2.53		0.047	0.2
65	Small leaf lime	Tilia cordata	9.2cm	0.21	2.53	274.39943	0.058	0.21
66	Small leaf lime	Tilia cordata	48.3cm	0.21	2.53	18213.199	4	14
67	Small leaf lime	Tilia cordata	42.6cm	0.21	2.53	13255.81	3	10
68	Soft/silver maple	Acer saccharinum	53.5cm	0.21	2.53		5	18
69	Small leaf lime	Tilia cordata	7.0cm	0.21	2.53	137.43522	0.029	0.11
70	Small leaf lime	Tilia cordata	6.8cm	0.21	2.53	127.71666	0.027	0.1
71	Small leaf lime	Tilia cordata	5.4cm	0.21	2.53	71.278116	0.015	0.1
72	Red maple	Acer rubrum	7.9cm	0.09	2.51		0.016	0.06
73	Red maple	Acer rubrum	6.4cm	0.09	2.51		0.01	0.04
74	Red maple	Acer rubrum	8.2cm	0.09	2.51		0.018	0.07
75	Red maple	Acer rubrum	5.8cm	0.09	2.51		0.007	0.03
76	Red oak	Quercus rubra	7.2cm	0.11	2.46		0.014	0.05
77	Red oak	Quercus rubra	5.3cm	0.11	2.46		0.007	0.03
78	Red oak	Quercus rubra	7.1cm	0.11	2.46		0.014	0.05
79	Soft/silver maple	Acer saccharinum	13.9cm	0.21	2.53		0.2	0.6
80	Soft/silver maple	Acer saccharinum	9.0cm	0.21	2.53		0.1	0.2
81	Soft/silver maple	Acer saccharinum	7.0cm	0.21	2.53		0.03	0.11
82	Japanese tree lilac	Cydonia oblonga	D1=10.5cm D2=3.7cm D3=2.9cm 11.3cm	0.21	2.53	81.726591	0.017	0.1
83	Japanese tree lilac	Cydonia oblonga	9.5cm	0.21	2.53	461.62409	0.1	0.4
84	Japanese tree lilac	Cydonia oblonga	9.5cm	0.21	2.53	297.60534	0.1	0.2
85	Japanese tree lilac	Cydonia oblonga	D1=5.4cm D2=4.6cm D3=8.1cm	0.21	2.53	93.051347	0.02	0.07
86	Japanese tree lilac	Cydonia oblonga	D1=7.0cm D2=4.3cm D3=7.0cm D4=7.1cm 11.01cm	0.21	2.53	137.43522	0.03	0.11
87	Japanese tree lilac	Cydonia oblonga	11.01cm	0.21	2.53	432.23698	0.1	0.33
88	Red soft maple	Acer rubrum	10cm	0.09	2.51		0.03	0.11
89	Red soft maple	Acer rubrum	9.0cm	0.09	2.51		0.022	0.08
90	Soft/silver maple	Acer saccharinum	10.5cm	0.21	2.53		0.1	0.3
91	Honey locust	Gleditsia triacanthos	16.4cm	0.08	2.63		0.1	0.5
92	Soft/silver maple	Acer saccharinum	16.1cm	0.21	2.53		0.2	0.9
93	Red oak	Quercus rubra	18.0cm	0.11	2.46		0.1	0.5
94	Red oak	Quercus rubra	12.8cm	0.11	2.46		0.1	0.2
95	Japanese tree lilac	Cydonia oblonga	D1=9.2cm D2=5.6cm D3=4.9cm D4=6.2cm D5=10.6cm	0.21	2.53	152.82937	0.032	0.1
96	Japanese tree lilac	Cydonia oblonga	D1=10.9cm D2=9.5cm	0.21	2.53	356.25292	0.1	0.3
97	Japanese tree lilac	Cydonia oblonga	D1=8.0 D2=13.8cm	0.21	2.53	421.39467	0.1	0.3
98	Japanese tree lilac	Cydonia oblonga	D1=12.2cm D2=10.9cm D3=10.3cm D4=7.4cm D5=8.5cm	0.21	2.53	326.97052	0.1	0.3
99	Japanese tree lilac	Cydonia oblonga	D1=12.0cm D2=6.4cm	0.21	2.53	274.39943	0.1	0.2
100	Japanese tree lilac	Cydonia oblonga	D1=10.0cm D2=8.6cm D3=10.0cm	0.21	2.53	282.00828	0.1	0.2



101	Japanese tree lilac	Cydonia oblonga	D1=14.6cm D2=14.3cm	0.21	2.53	859.93505	0.18	0.7
102	Japanese tree lilac	Cydonia oblonga	D1=9.6cm D2=8.2cm	0.21	2.53	252.32293	0.05	0.2
103	Japanese tree lilac	Cydonia oblonga	D1=8.3cm D2=8.5cm D3=10.5cm D4=10.6cm	0.21	2.53	295.23337	0.06	0.2
104	Japanese tree lilac	Cydonia oblonga	3.5cm	0.21	2.53	23.795353	0.005	0.02
105	Japanese tree lilac	Cydonia oblonga	3.2cm	0.21	2.53	18.968345	0.004	0.01
106	Japanese tree lilac	Cydonia oblonga	3.3cm	0.21	2.53	20.504079	0.004	0.02
107	Japanese tree lilac	Cydonia oblonga	3.1cm	0.21	2.53	17.504314	0.004	0.01
108	Japanese tree lilac	Cydonia oblonga	3.6cm	0.21	2.53	25.553202	0.005	0.02
109	Japanese tree lilac	Cydonia oblonga	2.9cm	0.21	2.53	14.786553	0.003	0.01
110	European hornbeam	Carpinus betulus	3.0cm	0.08	2.63		0.0014	0.005
111	European hornbeam	Carpinus betulus	2.9cm	0.08	2.63		0.0013	0.005
112	European hornbeam	Carpinus betulus	3.3cm	0.08	2.63		0.0018	0.007
113	European hornbeam	Carpinus betulus	3.8cm	0.08	2.63		0.033	0.123
114	European hornbeam	Carpinus betulus	3.5cm	0.08	2.63	26.9711	0.0022	0.008
115	European hornbeam	Carpinus betulus	3.2cm	0.08	2.63	21.308	0.0017	0.006
116	European hornbeam	Carpinus betulus	3.6cm	0.08	2.63	29.0452	0.0023	0.009
117	European hornbeam	Carpinus betulus	3.4cm	0.08	2.63	24.9913	0.002	0.007
118	Red oak	Quercus rubra	2.2cm	0.11	2.46	6.956	0.0008	0.003
119	Red oak	Quercus rubra	2.4cm	0.11	2.46	8.6162	0.0009	0.003
120	Red oak	Quercus rubra	2.5cm	0.11	2.46	9.5264	0.001	0.004
121	European hornbeam	Carpinus betulus	2.2cm	0.08	2.63	7.9537	0.0006	0.002
122	European hornbeam	Carpinus betulus	3.0cm	0.08	2.63	17.9816	0.0014	0.005
123	European hornbeam	Carpinus betulus	3.0cm	0.08	2.63	17.9816	0.0014	0.005
124	Japanese tree lilac	Cydonia oblonga	3.5cm	0.21	2.53	23.795353	0.005	0.018
125	Japanese tree lilac	Cydonia oblonga	3.2cm	0.21	2.53	18.968345	0.0040	0.015
126	Japanese tree lilac	Cydonia oblonga	3.3cm	0.21	2.53	20.504079	0.0043	0.016
127	European hornbeam	Carpinus betulus	3.1cm	0.08	2.63	19.6011	0.0016	0.006
128	European hornbeam	Carpinus betulus	3.6cm	0.08	2.63	29.0452	0.0023	0.009
129	European hornbeam	Carpinus betulus	3.2cm	0.08	2.63	18.968345	0.0015	0.006
130	Japanese tree lilac	Cydonia oblonga	4.0cm	0.21	2.53	33.358904	0.007	0.03
131	Japanese tree lilac	Cydonia oblonga	3.4cm	0.21	2.53	22.112694	0.005	0.02
132	Japanese tree lilac	Cydonia oblonga	4.8cm	0.21	2.53	52.910313	0.011	0.04
133	Japanese tree lilac	Cydonia oblonga	3.0cm	0.21	2.53	16.110788	0.0034	0.01
134	Japanese tree lilac	Cydonia oblonga	3.2cm	0.21	2.53	18.968345	0.004	0.01
135	Japanese tree lilac	Cydonia oblonga	20cm	0.21	2.53	1957.0679	0.4	2
136	Japanese tree lilac	Cydonia oblonga	21cm	0.21	2.53	2214.1896	0.5	2
137	Japanese tree lilac	Cydonia oblonga	19.5cm	0.21	2.53	1835.6402	0.4	1
138	Japanese tree lilac	Cydonia oblonga	41cm	0.21	2.53	12032.148	3	9
139	Japanese tree lilac	Cydonia oblonga	33cm	0.21	2.53	6947.6874	1	5
140	Japanese tree lilac	Cydonia oblonga	30.9cm	0.21	2.53	5882.9472	1	5
141	Japanese tree lilac	Cydonia oblonga	44.9cm	0.21	2.53	15142	3	12
142	Japanese tree lilac	Cydonia oblonga	37.4cm	0.21	2.53	9535.9761	2	7
143	Japanese tree lilac	Cydonia oblonga	36.8cm	0.21	2.53	9153.6643	2	7
144	Norway maple	Acer platanoides	36cm	0.21	2.53	8658.5531	2	7
145	Soft/Silver maple	Acer saccharinum	31.3cm	0.21	2.53	6077.5309	1	5
146	Red maple	Acer rubrum	40.2cm	0.09	2.51	10631.815	1	4
147	Soft/Silver maple	Acer saccharinum	26.5cm	0.21	2.53	3988.5226	1	3
148	Soft/Silver maple	Acer saccharinum	26.6cm	0.21	2.53	4026.7117	1	3
149	Soft/Silver maple	Acer saccharinum	26.5cm	0.21	2.53	3988.5226	1	3
150	Soft/Silver maple	Acer saccharinum	42.6cm	0.21	2.53	13255.81	3	10

151	Honey locust	Gleditsia triacanthos	29.5cm	0.08	2.63	7338.9157	1	2
152	Soft/Silver maple	Acer saccharinum	29.8cm	0.21	2.53	5367.4393	1	4
153	European ash	Fraxinus excelsior	21.6cm	0.16	2.35	1367.6227	0.2	1
154	Soft/Silver maple	Acer saccharinum	36.8cm	0.21	2.53	9153.6643	2	7
155	Soft/Silver maple	Acer saccharinum	35.5cm	0.21	2.53	8357.5259	2	6
156	European ash	Fraxinus excelsior	35.9cm	0.16	2.35	4513.0687	1	3
157	Red oak	Quercus rubra	30.5cm	0.11	2.46	4481.0274	0.5	2
158	Soft/Silver maple	Acer saccharinum	36cm	0.21	2.53	8658.5531	2	7
159	Soft/Silver maple	Acer saccharinum	30.6cm	0.21	2.53	5739.5151	1	4
160	Soft/Silver maple	Acer saccharinum	29.6cm	0.21	2.53	5276.7683	1	4
161	Buttonball	Platanus occidentalis	39.5cm	0.21	2.53	10949.408	2	
162	Soft/Silver maple	Acer saccharinum	29.9cm	0.21	2.53	5413.1256	1	4
163	Soft/Silver maple	Acer saccharinum	26cm	0.21	2.53	3800.8661	1	3
164	Soft/Silver maple	Acer saccharinum	34cm	0.21	2.53	7492.7572	2	6
165	Soft/Silver maple	Acer saccharinum	28.5cm	0.21	2.53	4794.6564	1	4
166	Red maple	Acer rubrum	4.7cm	0.09	2.51	48.6368	0.004	0.016
167	Red maple	Acer rubrum	5cm	0.09	2.51	56.8086	0.01	0.019
168	Red maple	Acer rubrum	10.8cm	0.09	2.51	392.5487	0.04	0.130
169	Red maple	Acer rubrum	8.5cm	0.09	2.51	215.1996	0.02	0.071
170	Red oak	Quercus rubra	5cm	0.11	2.46	52.4162	0.01	0.021
171	Red maple	Acer rubrum	5.8cm	0.21	2.53	85.4029	0.02	0.07
172	Red maple	Acer rubrum	5.0cm	0.21	2.53	58.667	0.01	0.05
173	Red maple	Acer rubrum	31.1cm	0.21	2.53	5979.7604	1	5
174	Norway maple	Acer platanoides	36.5cm	0.21	2.53	8966.0456	2	7
175	Norway maple	Acer platanoides	37.3cm	0.21	2.53	9471.5999	2	7
176	Japanese tree lilac	Syringa reticulata	3.3cm	0.21	2.53	20.504079	0.004	0.02
177	Japanese tree lilac	Syringa reticulata	3.7cm	0.21	2.53	27.387372	0.01	0.02
178	Japanese tree lilac	Syringa reticulata	3.5cm	0.21	2.53	23.795353	0.005	0.02
179	Japanese tree lilac	Syringa reticulata	3.4cm	0.21	2.53	22.112694	0.005	0.02
180	Japanese tree lilac	Syringa reticulata	3.7cm	0.21	2.53	27.387372	0.01	0.02
181	Japanese tree lilac	Syringa reticulata	2.9cm	0.21	2.53	14.786553	0.003	0.01
182	Japanese tree lilac	Syringa reticulata	2.9cm	0.21	2.53	14.786553	0.003	0.01
183	Japanese tree lilac	Syringa reticulata	3.1cm	0.21	2.53	17.504314	0.004	0.01
184	Japanese tree lilac	Syringa reticulata	3.5cm	0.21	2.53	23.795353	0.005	0.02
185	Japanese tree lilac	Syringa reticulata	3.3cm	0.21	2.53	20.504079	0.004	0.02
186	Japanese tree lilac	Syringa reticulata	3.7cm	0.21	2.53	27.387372	0.01	0.02
187	Japanese tree lilac	Syringa reticulata	3.1cm	0.21	2.53	17.504314	0.004	0.01
188	Japanese tree lilac	Syringa reticulata	3.2cm	0.21	2.53	18.968345	0.004	0.01
189	Japanese tree lilac	Syringa reticulata	3.4cm	0.21	2.53	22.112694	0.005	0.02
190	Red maple	Acer rubrum	2.1cm	0.09	2.51	6.4382884	0.001	0.00
191	Japanese tree lilac	Syringa reticulata	2.2cm	0.21	2.53	7.3507116	0.002	0.01
192	Japanese tree lilac	Syringa reticulata	2.4cm	0.21	2.53	9.1608219	0.002	0.01
193	Japanese tree lilac	Syringa reticulata	3.6cm	0.21	2.53	25.553202	0.005	0.02
194	Japanese tree lilac	Syringa reticulata	3.3cm	0.21	2.53	20.504079	0.004	0.02
195	Japanese tree lilac	Syringa reticulata	3.0cm	0.21	2.53	16.110788	0.003	0.01
196	Japanese tree lilac	Syringa reticulata	3.2cm	0.21	2.53	18.968345	0.004	0.01
197	Japanese tree lilac	Syringa reticulata	3.5cm	0.21	2.53	23.795353	0.005	0.02
198	Japanese tree lilac	Syringa reticulata	3.2cm	0.21	2.53	18.968345	0.004	0.01
199	Japanese tree lilac	Syringa reticulata	3.6cm	0.21	2.53	25.553202	0.01	0.02
200	Japanese tree lilac	Syringa reticulata	3.4cm	0.21	2.53	22.112694	0.005	0.02

201	Japanese tree lilac	Syringa reticulata	3.3cm	0.21	2.53	20.504079	0.004	0.02
202	Japanese tree lilac	Syringa reticulata	3.7cm	0.21	2.53	27.387372	0.01	0.02
203	Japanese tree lilac	Syringa reticulata	3.8cm	0.21	2.53	29.29898	0.01	0.02
204	Japanese tree lilac	Syringa reticulata	3.7cm	0.21	2.53	27.387372	0.01	0.02
205	Japanese tree lilac	Syringa reticulata	3.5cm	0.21	2.53	23.795353	0.005	0.02
206	Japanese tree lilac	Syringa reticulata	3.4cm	0.21	2.53	22.112694	0.005	0.02
207	Midland Hawthorn	Crataegus rhipidophylla	78 cm	0.08	2.63	94669.221	8	28
208	Western serviceberry	Amelanchier alnifolia	5.1 cm	0.08	2.63	72.595477	0.01	0.02
209	Canadian hemlock	Tsuga canadensis	5.1 cm	0.06	2.45	54.1435	0.003	0.01
210	Canadian hemlock	Tsuga canadensis	4.6 cm	0.06	2.45	42.049	0.003	0.01
211	Canadian hemlock	Tsuga canadensis	5.0 cm	0.06	2.45	51.5794	0.003	0.01
212	Soft/Silver maple	Acer saccharinum	4.5 cm	0.21	2.53	44.9394	0.01	0.03
213	White oak	Quercus alba	8.0 cm	0.06	2.69	268.7274	0.02	0.1
214	White spruce	Picea glauca	10 cm	0.21	2.53	338.84416	0.1	0.3
215	White spruce	Picea glauca	27.9 cm	0.21	2.53	4543.3755	1	4
216	White spruce	Picea glauca	22.8 cm	0.21	2.53	2726.3095	1	2
217	Sugar maple	Acer saccharum	49.1cm	0.21	2.53	18986.118	4	15
218	Sugar maple	Acer saccharum	6.5cm	0.21	2.53	113.9385	0.02	0.1
219	White oak	Picea glauca	65.5cm	0.06	2.69	76858.003	5	17
220	Ironwood	Ostrya virginiana	22cm	0.09	2.35	1427.8852	0.13	0.5
221	Red maple	Acer rubrum	10cm	0.09	2.51	323.5936	0.03	0.11
222	White spruce	Picea glauca	15.1cm	0.21	2.53	961.19538	0.2	1
223	White spruce	Picea glauca	17.4cm	0.21	2.53	1375.9086	0.3	1
224	Red maple	Acer rubrum	11.4cm	0.09	2.51	449.605	0.04	0.15
225	Red maple	Acer rubrum	7.0cm	0.09	2.51	132.1892	0.01	0.04
226	Red maple	Acer rubrum	4.3cm	0.09	2.51	38.905	0.00	0.01
227	Staghorn sumac	Rhus typhina	5.4cm	0.08	2.47	64.4187	0.01	0.02
228	Staghorn sumac	Rhus typhina	5.0cm	0.08	2.47	53.2667	0.00	0.02
229	Staghorn sumac	Rhus typhina	20cm	0.08	2.47	1635.0991	0.13	0.48
230	Red maple	Acer rubrum	15.7cm	0.09	2.51	1003.9408	0.1	0.33
231	Red maple	Acer rubrum	9.4cm	0.09	2.51	277.0453	0.02	0.09
232	Red maple	Acer rubrum	27.7cm	0.09	2.51	4174.6898	0.4	1
233	Tamarack	Larix laricina	D1=8.2cm D2=7.8cm D3=9.2cm D4=6.5cm 16.4cm	0.21	2.53	186.63648	0.04	0.14
234	Ironwood	Ostrya virginiana	18cm	0.09	2.35	715.95058	0.1	0.2
235	Ironwood	Ostrya virginiana	11cm	0.09	2.35	891.02602	0.1	0.3
236	Ironwood	Ostrya virginiana	7.9cm	0.09	2.35	280.07401	0.03	0.1
237	Ironwood	Ostrya virginiana	7.9cm	0.09	2.35	128.65411	0.01	0.04
238	Trembling Aspen	Populus tremuloides	13cm	0.05	2.51	625.1695	0.03	0.11
239	Soft/Silver maple	Acer saccharinum	10cm	0.21	2.53	338.8441	0.07	0.26
240	Soft/Silver maple	Acer saccharinum	10.5cm	0.21	2.53	383.3618	0.08	0.30
241	Red maple	Acer rubrum	12.6cm	0.09	2.51	578.0029	0.05	0.19
242	Nikko fir	Abies homolepis	10.3cm	0.07	2.51	348.5149	0.02	0.09
243	Nikko fir	Abies homolepis	13cm	0.07	2.51	625.1695	0.04	0.16
244	Nikko fir	Abies homolepis	7.4cm	0.07	2.51	151.9748	0.01	0.04
245	Red oak	Quercus rubra	9.4cm	0.11	2.46	247.682	0.03	0.10
246	Canadian hemlock	Tsuga canadensis	11cm	0.06	2.45	355.9689	0.02	0.08
247	Canadian hemlock	Tsuga canadensis	9.2cm	0.06	2.45	229.763	0.01	0.05
248	Canadian hemlock	Tsuga canadensis	13.5cm	0.06	2.45	587.9193	0.04	0.13
249	Burr/white oak	Quercus macrocarpa	9.31cm	0.06	2.69	404.0867	0.02	0.09
250	Dogwood	Cornus	13.5cm	0.08	2.63	939.2426	0.08	0.28

251	Canadian hemlock	Tsuga canadensis	5.1cm	0.06	2.45	54.1435	0.003	0.01
252	Sugar maple	Acer saccharum	32.4cm	0.21	2.53	6632.5247	1	5
253	Sugar maple	Acer saccharum	D1=30.3cm D2=25.3cm	0.21	2.53	4502.2886	1	3
254	Sugar maple	Acer saccharum	25cm	0.21	2.53	3441.8205	1	3
255	Sugar maple	Acer saccharum	6.6cm	0.21	2.53	118.42575	0.02	0.1
256	Sugar maple	Acer saccharum	6.5cm	0.21	2.53	113.93858	0.02	0.1
257	Sugar maple	Acer saccharum	3.5cm	0.21	2.53	23.795353	0.005	0.02
258	Sugar maple	Acer saccharum	6.2cm	0.21	2.53	101.09996	0.021	0.1
259	Sugar maple	Acer saccharum	11cm	0.21	2.53	431.24442	0.1	0.33
260	Sugar maple	Acer saccharum	13.4cm	0.21	2.53	710.51809	0.1	0.5
261	Sugar maple	Acer saccharum	10.2cm	0.21	2.53	356.25292	0.1	0.27
262	Sugar maple	Acer saccharum	6.1cm	0.21	2.53	97.025186	0.02	0.07
263	Sugar maple	Acer saccharum	10.2cm	0.21	2.53	356.25292	0.1	0.27
264	Sugar maple	Acer saccharum	4.9cm	0.21	2.53	55.743737	0.01	0.04
265	White spruce	Picea glauca	4.2cm	0.21	2.53	37.741635	0.01	0.03
266	White spruce	Picea glauca	47cm	0.21	2.53	16998.382	4	13
267	White spruce	Picea glauca	30cm	0.21	2.53	5459.0463	1	4
268	White spruce	Picea glauca	31cm	0.21	2.53	5931.2344	1	5
269	White spruce	Picea glauca	27cm	0.21	2.53	4181.6755	1	3
270	White spruce	Picea glauca	21cm	0.21	2.53	2214.1896	0.5	2
271	White spruce	Picea glauca	35.5cm	0.21	2.53	8357.5259	2	6
272	White spruce	Picea glauca	37cm	0.21	2.53	9280.051	2	7
273	White spruce	Picea glauca	30.5cm	0.21	2.53	5692.1796	1	4
274	White spruce	Picea glauca	33.5cm	0.21	2.53	7217.1106	2	6
275	White spruce	Picea glauca	37.4cm	0.21	2.53	9535.9761	2	7
276	White spruce	Picea glauca	36.4cm	0.21	2.53	8904.0277	2	7
277	White spruce	Picea glauca	43cm	0.21	2.53	13572.979	3	10
278	White spruce	Picea glauca	34cm	0.21	2.53	7492.7572	2	6
279	White spruce	Picea glauca	39.5cm	0.21	2.53	10949.408	2	8
280	White spruce	Picea glauca	30.5cm	0.21	2.53	5692.1796	1	4
281	Sugar maple	Acer saccharum	33.7cm	0.21	2.53	7326.6196	1.54	6
282	Sugar maple	Acer saccharum	6.4cm	0.21	2.53	109.5557	0.02	0.1
283	Sugar maple	Acer saccharum	6.3cm	0.21	2.53	105.2765	0.02	0.1
284	Sugar maple	Acer saccharum	6.6cm	0.21	2.53	118.4257	0.02	0.1
285	Sugar maple	Acer saccharum	7.0cm	0.21	2.53	137.4352	0.03	0.1
286	Sugar maple	Acer saccharum	6.7cm	0.21	2.53	123.0181	0.03	0.1
287	Ginkgo	Ginkgo biloba	5.6cm	0.21	2.53	78.147611	0.02	0.1
288	Ginkgo	Ginkgo biloba	6.5cm	0.21	2.53	113.93858	0.02	0.1
289	Ginkgo	Ginkgo biloba	5.4cm	0.21	2.53	71.278116	0.01	0.1
290	Honey locust	Gleditsia triacanthos	7.0cm	0.08	2.63	166.9582	0.01	0.05
291	Honey locust	Gleditsia triacanthos	7.2cm	0.08	2.63	179.7978	0.01	0.05
292	Honey locust	Gleditsia triacanthos	7.4cm	0.08	2.63	193.2321	0.02	0.06
293	Honey locust	Gleditsia triacanthos	7.4cm	0.08	2.63	193.2321	0.02	0.06
294	Honey locust	Gleditsia triacanthos	7.2cm	0.08	2.63	179.7978	0.01	0.05
295	Honey locust	Gleditsia triacanthos	7.1cm	0.08	2.63	173.3043	0.01	0.05
296	Honey locust	Gleditsia triacanthos	7.4cm	0.08	2.63	193.2321	0.02	0.06
297	Honey locust	Gleditsia triacanthos	7.0cm	0.08	2.63	166.9582	0.01	0.05
298	Honey locust	Gleditsia triacanthos	7.7cm	0.08	2.63	214.5213	0.02	0.06
299	English walnut	Juglans regia	25.2cm	0.05	2.73	6696.1238	0.33	1
300	English walnut	Juglans regia	26.9cm	0.05	2.73	8002.4639	0.40	1

301	Chokecherry	Aronia	16.5cm	0.08	2.63	1592.1456	0.13	0.5
302	Silver berry	Elaeagnus commutata	9.1cm	0.08	2.63	332.87322	0.03	0.1
303	Silver berry	Elaeagnus commutata	9.0cm	0.08	2.63	323.33878	0.03	0.1
304	Silver berry	Elaeagnus commutata	7.7cm	0.08	2.63	214.52139	0.02	0.1
305	Silver berry	Elaeagnus commutata	7.6cm	0.08	2.63	207.27158	0.02	0.1
306	Silver berry	Elaeagnus commutata	8.0cm	0.08	2.63	237.20654	0.02	0.1
307	Silver berry	Elaeagnus commutata	8.5cm	0.08	2.63	278.20938	0.02	0.1
308	Silver berry	Elaeagnus commutata	120cm	0.08	2.63	293931.87	24	86
309	Dogwood	Cornus	1.15cm	0.08	2.63	1.4442	0.00	0.0004
310	Dogwood	Cornus	6.4cm	0.08	2.63	131.9025	0.01	0.04
311	Dogwood	Cornus	6.1cm	0.08	2.63	116.2565	0.01	0.03
312	Dogwood	Cornus	6.5cm	0.08	2.63	137.3922	0.01	0.04
313	Dogwood	Cornus	6.9cm	0.08	2.63	160.7581	0.01	0.05
314	Dogwood	Cornus	6.5cm	0.08	2.63	137.3922	0.01	0.04
315	Dogwood	Cornus	6.7cm	0.08	2.63	148.791	0.01	0.04
316	Dogwood	Cornus	7.0cm	0.08	2.63	166.9582	0.01	0.05
317	Speckled alder	Alnus incana	6.75cm	0.21	2.53	125.3541	0.03	0.1
318	Speckled alder	Alnus incana	7.7cm	0.21	2.53	174.91278	0.04	0.1
319	Speckled alder	Alnus incana	7.8cm	0.21	2.53	180.71714	0.04	0.1
320	Speckled alder	Alnus incana	7.5cm	0.21	2.53	163.64585	0.03	0.1
321	Speckled alder	Alnus incana	8.1cm	0.21	2.53	198.82322	0.04	0.2
322	Speckled alder	Alnus incana	9.1cm	0.21	2.53	266.91607	0.06	0.2
323	Speckled alder	Alnus incana	7.4cm	0.21	2.53	158.1817	0.03	0.1
324	Speckled alder	Alnus incana	8.0cm	0.21	2.53	192.67158	0.04	0.1
325	Speckled alder	Alnus incana	8.1cm	0.21	2.53	198.82322	0.04	0.2
326	Speckled alder	Alnus incana	7.3cm	0.21	2.53	152.82937	0.03	0.1
327	Ironwood	Ostrya virginiana	6.4cm	0.09	2.35	78.437355	0.01	0.03
328	Dogwood	Cornus	7.3cm	0.08	2.63	186.44	0.01	0.1
329	Dogwood	Cornus	7.2cm	0.08	2.63	179.7978	0.01	0.1
330	Dogwood	Cornus	7.2cm	0.08	2.63	179.7978	0.01	0.1
331	Dogwood	Cornus	8.4cm	0.08	2.63	269.6835	0.02	0.1
332	Dogwood	Cornus	6.8cm	0.08	2.63	154.7028	0.01	0.05
333	Dogwood	Cornus	7.0cm	0.08	2.63	166.9582	0.01	0.05
334	Dogwood	Cornus	6.1cm	0.08	2.63	116.2565	0.01	0.03
335	Dogwood	Cornus	8.3cm	0.08	2.63	261.3216	0.02	0.1
336	Dogwood	Cornus	7.3cm	0.08	2.63	186.44	0.01	0.05
337	Basswood	Tilia americana	7.0cm	0.09	2.35	96.823414	0.01	0.03
338	Basswood	Tilia americana	6.2cm	0.09	2.35	72.798171	0.01	0.02
339	Basswood	Tilia americana	7.8cm	0.09	2.35	124.85971	0.01	0.04
340	Basswood	Tilia americana	8.3cm	0.09	2.35	144.48858	0.01	0.05
341	Basswood	Tilia americana	8.6cm	0.09	2.35	157.06209	0.01	0.05
342	Basswood	Tilia americana	8.6cm	0.09	2.35	157.06209	0.01	0.05
343	Basswood	Tilia americana	8.8cm	0.09	2.35	165.78082	0.01	0.05
344	Dogwood	Cornus	6.9cm	0.08	2.63	160.7581	0.01	0.05
345	Dogwood	Cornus	7.8cm	0.08	2.63	221.9263	0.02	0.07
346	Dogwood	Cornus	9.4cm	0.08	2.63	362.5152	0.03	0.11
347	Dogwood	Cornus	8.1cm	0.08	2.63	245.0843	0.02	0.1
348	Dogwood	Cornus	8.2cm	0.08	2.63	253.12231	0.02	0.1
349	Dogwood	Cornus	7.8cm	0.08	2.63	221.92632	0.02	0.1
350	Dogwood	Cornus	7.2cm	0.08	2.63	179.79784	0.01	0.05

351	Dogwood	Cornus	7.5cm	0.08	2.63	102.95345	0.01	0.03
352	Dogwood	Cornus	19.3cm	0.08	2.63	2404.4498	0.19	0.7
353	Midland Hawthorn	Crataegus rhipidophylla	23.9cm	0.08	2.63	4218.7761	0.34	1
354	Midland Hawthorn	Crataegus rhipidophylla	25.1cm	0.08	2.63	4798.9021	0.4	1
355	Midland Hawthorn	Crataegus rhipidophylla	22.7cm	0.08	2.63	3684.2408	0.3	1
356	Midland Hawthorn	Crataegus rhipidophylla	26.2cm	0.08	2.63	5371.9554	0.43	2
357	Midland Hawthorn	Crataegus rhipidophylla	31.6cm	0.08	2.63	8793.809	0.70	3
358	Midland Hawthorn	Crataegus rhipidophylla	33.5cm	0.08	2.63	10253.399	0.8	3
359	Midland Hawthorn	Crataegus rhipidophylla	30.2cm	0.08	2.63	7805.8151	0.6	2
360	Red maple	Acer rubrum	24.7cm	0.09	2.51	3130.9011	0.3	1
361	Red maple	Acer rubrum	34.4cm	0.09	2.51	7190.5431	0.6	2
362	Red maple	Acer rubrum	42.9cm	0.09	2.51	12516.065	1	4
363	Red maple	Acer rubrum	28.8cm	0.09	2.51	4603.3622	0.4	2
364	Red maple	Acer rubrum	40.3cm	0.09	2.51	10698.322	1	4
365	Silver maple	Acer saccharinum	D1=9.9cm D2=6.5cm D3=7.4cm D4=9.9cm D5=7.1cm D6=7.5cm	0.21	2.53	195.73279	0.04	0.2
366	Silver maple	Acer saccharinum	34.4cm	0.21	2.53	7717.7883	2	5.95
367	Silver maple	Acer saccharinum	35.9cm	0.21	2.53	8597.832	2	6.63
368	Tamarack	Larix laricina	37.5cm	0.21	2.53	9600.6162	2	7.40
369	Canadian hemlock	Tsuga canadensis	28.8cm	0.06	2.45	3762.804	0.23	0.83
370	Midland Hawthorn	Crataegus rhipidophylla	D1=25.2cm D2=26.2cm	0.08	2.63	186.44	0.01	0.05
371	Sugar maple	Acer saccharum	64.4cm	0.08	2.63	179.7978	0.01	0.05
372	Tamarack	Larix laricina	30cm	0.08	2.63	179.7978	0.01	0.05
373	Canadian hemlock	Tsuga canadensis	3.81cm	0.08	2.63	269.6835	0.02	0.08
374	Canadian hemlock	Tsuga canadensis	34.4cm	0.08	2.63	154.7028	0.01	0.05
375	Tamarack	Larix laricina	32.6cm	0.08	2.63	166.9582	0.01	0.05
376	Tamarack	Larix laricina	44.9cm	0.08	2.63	116.2565	0.01	0.03
377	Sugar maple	Acer saccharum	52.2cm	0.08	2.63	261.3216	0.02	0.08
378	Eastern white pine	Pinus strobus	D1=11.3cm D2=7.9cm D3=12.8cm	0.08	2.63	186.44	0.01	0.05
379	Burning bush	Euonymus alatus	D1=16.3cm D2=9.3cm D3=13.7cm	0.21	2.53	670.95961	0.14	0.5
380	Burning bush	Euonymus alatus	D1=15.0cm D2=13.3cm D3=12.4cm	0.21	2.53	724.00978	0.15	0.6
381	Sugar maple	Acer saccharum	37.6cm	0.21	2.53	9665.5205	2	7
382	Sugar maple	Acer saccharum	55.1cm	0.21	2.53	25416.371	5	20
383	Sugar maple	Acer saccharum	33.3cm	0.21	2.53	7108.5973	1	5
384	Sugar maple	Acer saccharum	44.9cm	0.21	2.53	15142	3	12
385	Red oak	Quercus rubra	31.7cm	0.11	2.46	4927.2635	0.54	2
386	Red oak	Quercus rubra	27.3cm	0.11	2.46	3411.6158	0.4	1
387	Eastern white pine	Pinus strobus	D1=11.2cm D2=9.5cm	0.08	2.63	466.97445	0.04	0.14
388	Eastern white pine	Pinus strobus	D1=9.7cm D2=8.9cm D3=7.3cm	0.08	2.63	289.53988	0.02	0.1
389	Eastern white pine	Pinus strobus	D1=8.2cm D2=7.2cm D3=9.5cm	0.08	2.63	261.32164	0.02	0.1
390	White spruce	Picea glauca	24.6cm	0.21	2.53	3304.1962	0.7	3
391	White spruce	Picea glauca	12.2cm	0.21	2.53	560.38999	0.12	0.4
392	White spruce	Picea glauca	8.5cm	0.21	2.53	224.61041	0.05	0.2
393	Tamarack	Larix laricina	23.8cm	0.21	2.53	3039.063	0.6	2
394	Tamarack	Larix laricina	5.9cm	0.21	2.53	89.177561	0.02	0.1
395	Red maple	Acer rubrum	26.9cm	0.09	2.51	3878.6288	0.35	1
396	Red maple	Acer rubrum	53.4cm	0.09	2.51	21683.459	2	7
397	Red maple	Acer rubrum	68cm	0.09	2.51	39773.826	4	13
398	Silver maple	Acer saccharinum	35.4cm	0.21	2.53	8298.0921	2	6
399	Silver maple	Acer saccharinum	11cm	0.21	2.53	431.24442	0.09	0.33
400	Silver maple	Acer saccharinum	D1=8.9cm D2=6.3cm	0.21	2.53	169.22261	0.04	0.1
401	Silver maple	Acer saccharinum	30.5cm	0.21	2.53	5692.1796	1	4
402	Silver maple	Acer saccharinum	6.4cm	0.21	2.53	109.55579	0.02	0.1
403	Tamarack	Larix laricina	23.8cm	0.21	2.53	3039.063	0.64	2
404	Tamarack	Larix laricina	26.9cm	0.21	2.53	4142.6026	0.9	3
405	Sugar maple	Acer saccharum	11cm	0.21	2.53	431.24442	0.09	0.3
406	Sugar maple	Acer saccharum	8.9cm	0.21	2.53	252.32293	0.05	0.2