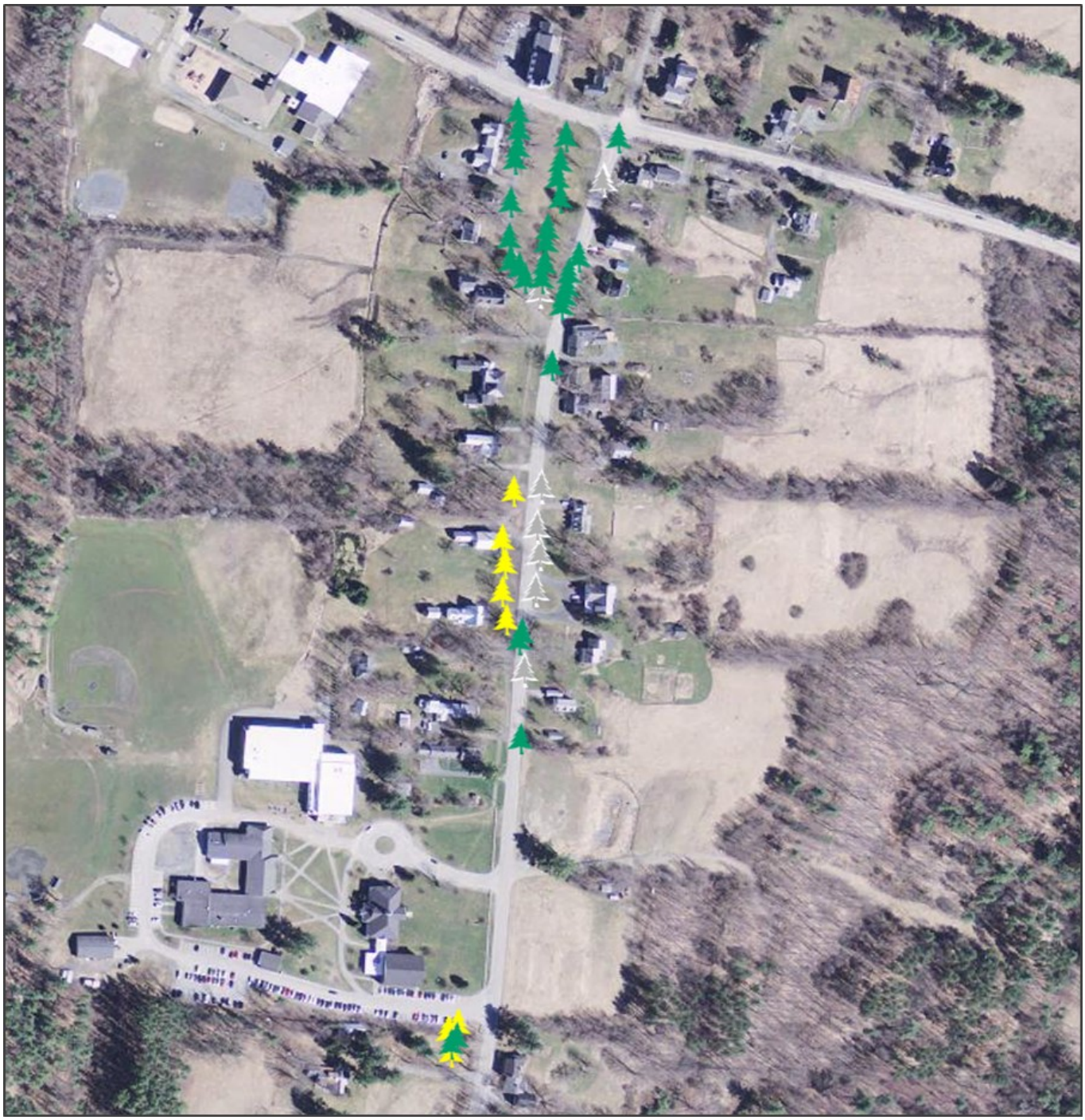
Thetford Hill Green & Academy Road Tree Inventory Summary



Prepared for the Thetford Hill Village Improvement Society
by the Vermont Urban & Community Forestry Program
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PLANT LIVE GROW
VERMONT URBAN & COMMUNITY FORESTRY PROGRAM

THE UNIVERSITY OF VERMONT EXTENSION

FORESTS, PARKS & RECREATION VERMONT
AGENCY OF NATURAL RESOURCES

Data collection on August 1st, 2018 with Thetford volunteers Jane Francisco and Greg Gundlach.

Project Summary & Methodology

The goal of the Thetford Hill village inventory was to locate and assess trees within the public right-of-way (ROW) on Academy Road and the Thetford Hill village green in order to establish and maintain a record of public trees, and to support future community forest planning. The information collected in the inventory and presented in this summary report should provide local decision makers and citizens a better understanding of the composition, condition, and benefits of Thetford Hill's public trees and will facilitate planning using a map-based tree inventory tool.

This project was initiated in the summer of 2018. To plan for the public tree inventory, Vermont Urban & Community Forestry Program (VT UCF) staff coordinated with Jane Francisco, Thetford resident and member of the Thetford Hill Village Improvement Society in order to decide the scope of the inventory, and to determine the public right-of-way (ROW) for the streets. VT UCF has developed a tree inventory tool in collaboration with the Vermont Agency of Natural Resources' (ANR) GIS team. The map-based tool uses the free application *Collector for ArcGIS*, developed by Esri (http://doc.arcgis.com/en/collector/), for data collection and is linked to the publicly-accessible ANR Atlas online mapping website (http://anr.vermont.gov/maps/nr-atlas).

On August 1st, 2018, VT UCF staff worked with citizen volunteers Jane Francisco and Greg Gundlach to conduct an inventory of **37 trees** located within the public ROW of **Academy Road and the Thetford Hill village green**. Additionally, **7 potential tree planting** locations were identified. A list of streets and sites and number of trees inventoried is found in Table 1 below. A series of GIS maps highlighting the tree inventory results can be found in Appendix B.

Table 1: Thetford Hill streets and sites included in the public tree inventory.

Street or Site	What was Inventoried	Number of Trees Inventoried
Academy Road	ROW; from intersection with Route 113 (N) to Thetford Academy (S)	**20**
Thetford Hill village green	All planted landscape trees	**18**

Each public tree inventoried was recorded into the *Collector for ArcGIS* application using an iPad, provided by VT UCF. The application is map-based and uses GPS and a base layer map to allow the user to input information about a tree, linking it to a particular geographic location. Data recorded for each public tree in Thetford Hill, outlined in Table 2 below, included street name, overall condition, species, diameter class (using a measurement for diameter at breast height, or DBH), a recommendation for monitoring (yes/no), additional comments, and the nearest house or building address (if visible). All inventory data collected on public trees is available for viewing on the ANR Atlas website and instructions for accessing that tool are included in Appendix A.

Table 2: Data collection parameters for the Thetford Hill public tree inventory.

Data Parameters	Description
Site ID	Street name or property name.
Species	Common name. Include in comments box if not listed.
Tree Condition	● *Good:* full canopy (75-100%), no dieback of branches over 2" in diameter, no significant defects, minimal mechanical damage ● *Fair:* thinning canopy (50-75%), medium to low new growth, significant mechanical damage, obvious defects/insects/disease, foliage off-color and/or sparse ● *Poor:* declining (25-50%), visible dead branches over 2" in diameter, significant dieback, severe mechanical damage or decay (over 40% of stem affected) ● *Dead:* no signs of life, bark peeling; scratch test on twigs for signs of life (green)
Diameter (DBH)	Diameter taken at 4.5' above ground in classes of 0-3", 3-6", 6-12", 12-18", 18-24", 24-36", 36-42", 42"+. If on slope, uphill side measured. If abnormal growth, measured above or below growth. If multi-stemmed, each stem's DBH is squared, all squares summed, and the square root taken; indicate "multi-stemmed" in comments box.
Monitor	Yes: any one visible defect is affecting >40% of the tree, the tree poses a hazard to people/infrastructure/cars, the trunk or branches are growing into utility wires, the tree is dead or in poor condition, or the tree is an ash tree showing evidence of woodpecker flecking, blonding, epicormic branching/water sprouts, and/or suspicious exit holes No: no major defects, tree in good or fair condition.
Comments	Notes, elaborate on any existing conditions; max 255 characters.

House Number	Corresponding house address, numerical field. If a corner lot house is on a different street, enter house number and write "House located on X Street; corner tree" in comments box.
Collection Date/Time	Date and time.
Greenspace Name	If a park or cemetery, indicate the name of the property.
Town	Name of the town.

Summary of Findings

<u>Community Forest Diversity</u>

- Of the 37 public trees, there are 11 different species in 8 different genera.
- The three most common tree genera by number of trees are *Acer* (maple) at 57%, *Ulmus* (elm) at 11%, and *Fraxinus* (ash) at 8%. See Figure 1 below.
- The three most common species are sugar maple (*Acer saccharum)* at 56%, slippery elm (*Ulmus rubra*) at 11%, and black locust (*Robinia pseudoacacia*) at 8%. A full species list is included in Table 3 below.
- Only three public ash (*Fraxinus)* trees were identified in the inventory. All municipalities in Vermont are encouraged to plan for the management of EAB, which was first detected in Orange County in February 2018. The locations and conditions of these trees should be monitored. A rural roadside sample inventory of roadside ash trees would be appropriate in order to fully assess the impact that EAB may have on Thetford's public tree population.

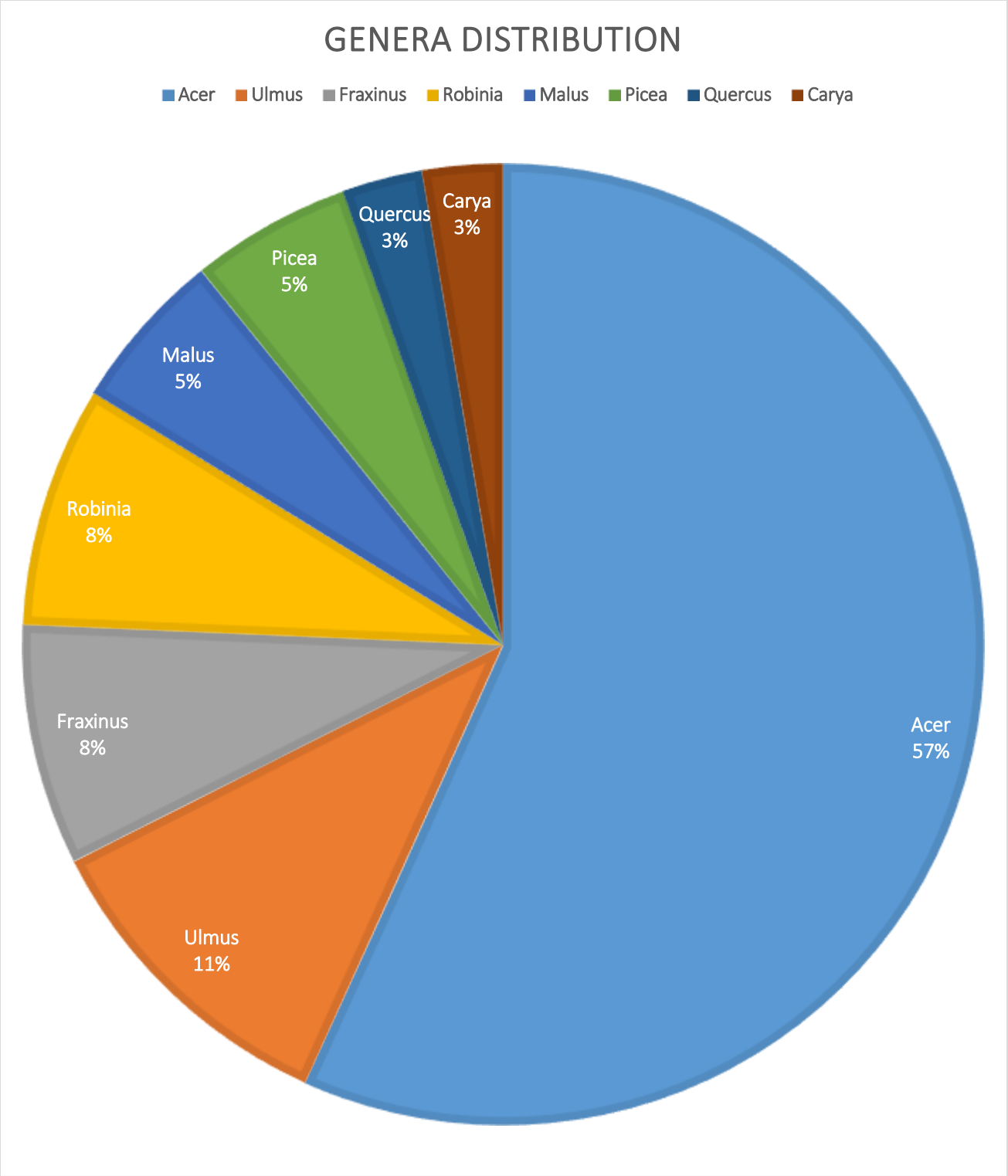


Figure 1: Genera distribution of Thetford Hill's public trees.

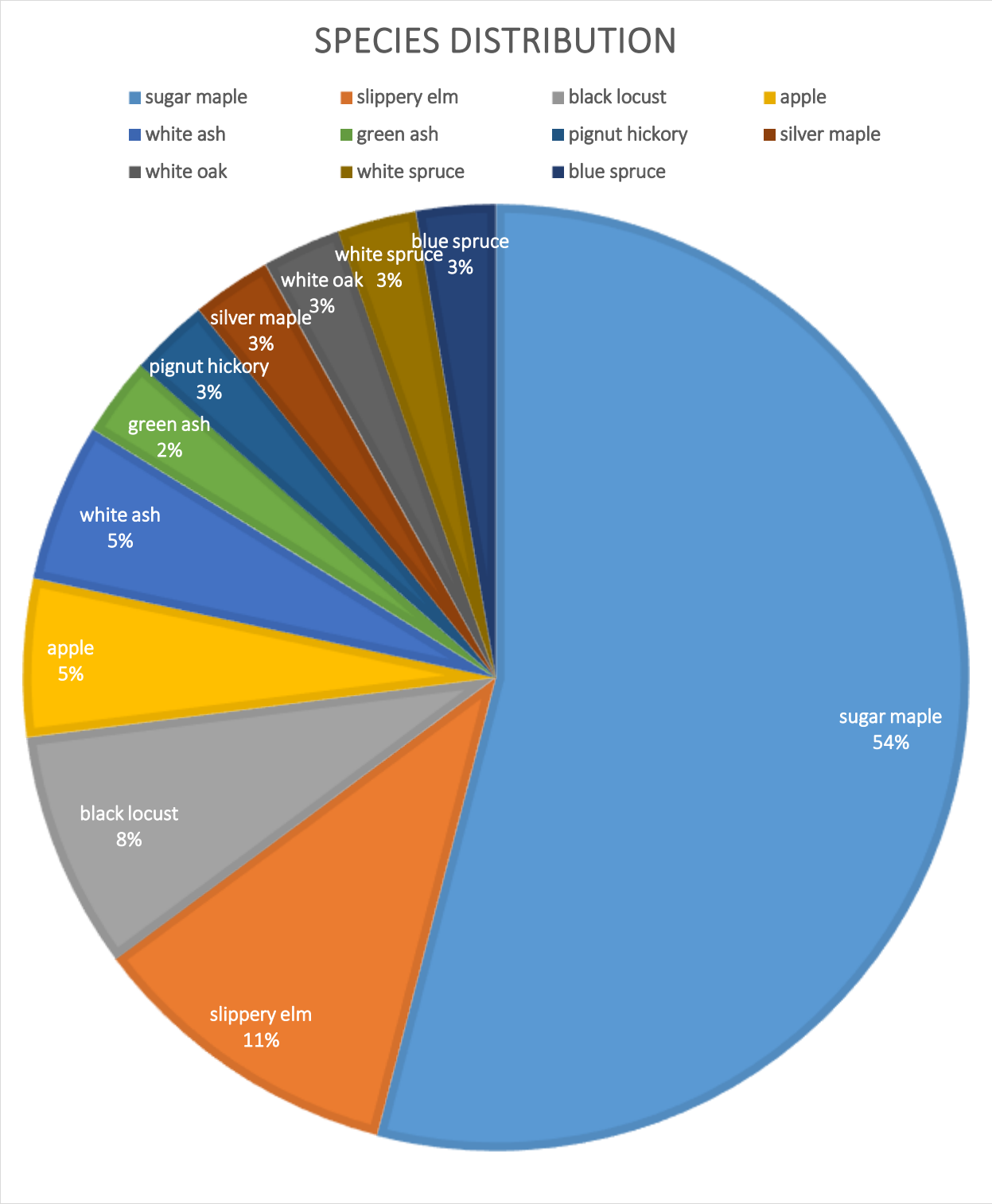


Figure 2: Species distribution of Thetford Hill's public trees.

Table 3: Full species list of inventoried trees in Thetford Hill

Species: common and scientific name	Number of public trees inventoried in Thetford Hill	Percent of total public tree population
sugar maple *(Acer saccharum)*	20	54.05%
slippery elm (*Ulmus rubra)*	4	10.81%
black locust (*Robinia pseudoacacia*)	3	8.11%
apple (*Malus pulmia)*	2	5.41%
white ash *(Fraxinus americana)*	2	5.41%
green ash (*Fraxinus pennsylvanica)*	1	2.70%
silver maple *(Acer saccharinum)*	1	2.70%
pignut hickory (*Carya glabra*)	1	2.70%
white spruce *(Picea glauca)*	1	2.70%
white oak (*Quercus alba*)	1	2.70%
Colorado blue spruce (*Picea pungens)*	1	2.70%
	37	100.00%

Community Forest Structure

- The inventoried public trees in Thetford are represented in the following size classes: 0-3" (1), 3-6" (1) 6-12" (5), 12-18" (5), 18-24" (11), 24-30" (7), 30-36" (4), 36-42" (2), and 42"+ (1). See figure 3 below.
- The majority of Thetford Hill's public tree population is mature or senescing; 68% (25) of the public trees are over 18" in diameter. While it is important to note that large, mature, shade trees provide significantly more environmental and human health benefits, it is equally important to continue to plant trees to eventually replace the trees that are now mature.
- Efforts should be made to protect and maintain the large public trees (>30") along Academy Road, particularly the sugar maples in needs of pruning.
- The largest public tree inventoried in Thetford Hill was a silver maple at 205 Academy Road.

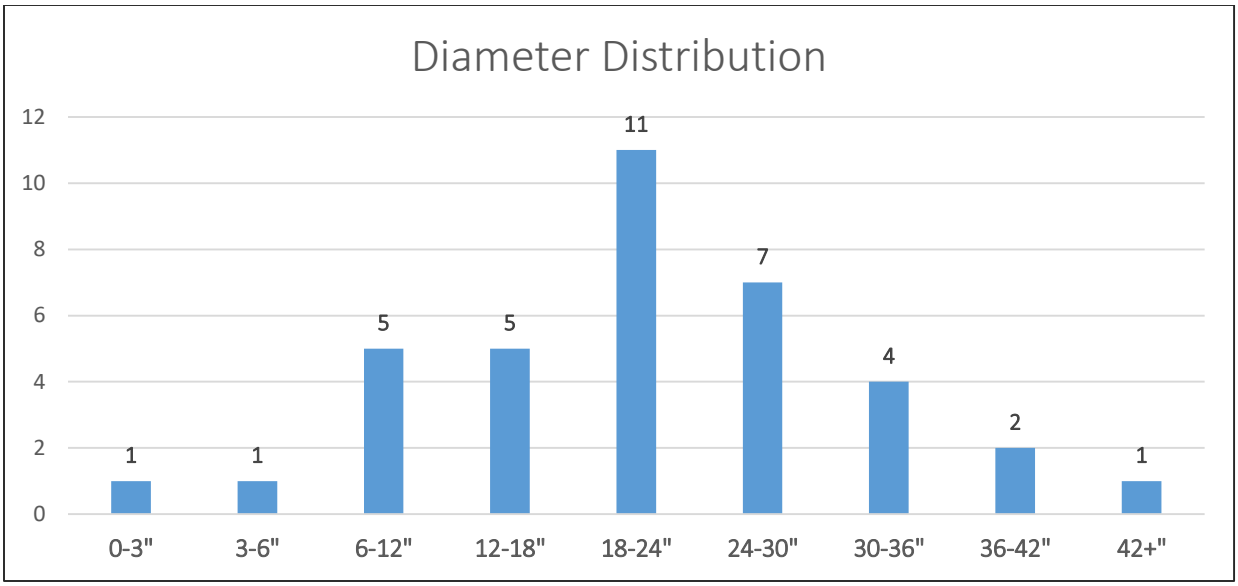


Figure 3: Diameter distribution of Thetford Hill's public trees.

Community Forest Health

- The majority of Thetford Hill's public trees (29, or 78%) were assessed as being in "Good" condition. The remaining 8 trees (22%) were considered to be in "Fair" condition.
- 17 (46%) public trees were assessed to be in need of monitoring. Trees that were flagged as in need of monitoring expressed one or more of the following conditions:
  - The tree has a visible defect affecting >40% of the tree
  - The tree poses a risk to public safety/infrastructure/utility lines/vehicles
  - The tree has considerable deadwood in its crown

Potential Tree Planting Locations

There were 7 potential tree planting locations identified, 6 along Academy Road and 1 on the Thetford Hill village green. Potential tree planting locations were only indicated in locations appropriate for a large shade tree (so, not underneath the utility lines on the west side of Academy Road). These locations are indicated on the maps in Appendix B.

Recommendations

A healthy public tree population is contingent upon proper management, stewardship, and a municipality's commitment to understanding and maintaining its public trees and community forest. A comprehensive public tree inventory is an important piece of a sustainable community tree program. Based on the results of the limited Thetford Hill public tree inventory, our priority recommendations are:

- Prioritize establishing a regular visual inspection cycle for the 17 public trees that were identified as in need of monitoring. Some of these trees may need to be removed, pruned, or maintained in other ways, and some may just need a follow-up health assessment.
- Consider implementing a tree planting program to increase size class and species diversity.
- Because of the high number of public trees in the *Acer* genus, when planting trees in the future, strive for diversification. In consideration of the expressed vision for Academy Road to be lined with large shade trees, consider the following species:
    - American linden (*Tilia americana)*
    - Pin oak (*Quercus palustris)*
    - Bur oak (*Quercus macrocarpa)*
    - Swamp white oak (*Quercus bicolor)*
    - Northern red oak (*Quercus rubra)*
    - American hornbeam (*Carpinus carolinia)*
    - Northern hackberry (*Celtis occidentalis)*
    - Sugar hackberry (*Celtis laevigata)*
    - American sycamore (*Platanus occidentalis)*
    - London planetree (*Platanus x. acerifolia)*
    - Horse chestnut (*Aesculus x carnea)*
    - European beech (*Fagus sylvatica)*
    - Kentucky coffeetree (*Gymnocladus dioicus)*

    - Tupelo (*Nyssa sylvatica)*
    - Tuliptree (*Liriodendron tulipifera)*
    - Elm (*Ulmus spp.) *several hybrid elms are now available and have proven to be disease-resistant. Consider 'Triumph', 'Accolade', 'Frontier', and 'New Horizon'.*
- Refer to VT UCF's Tree Selection Tool to choose the right tree for the right place and to learn more about salt tolerance, hardiness zones, and preferred site conditions for specific species at vtcommunityforestry.org/resources/tree-care/tree-selection.
- Prepare for the arrival of EAB in Thetford by establishing a preparedness plan. Refer to the VT UCF website's community preparedness page at go.uvm.edu/eab for resources and guidance in the community preparedness process and considerations.

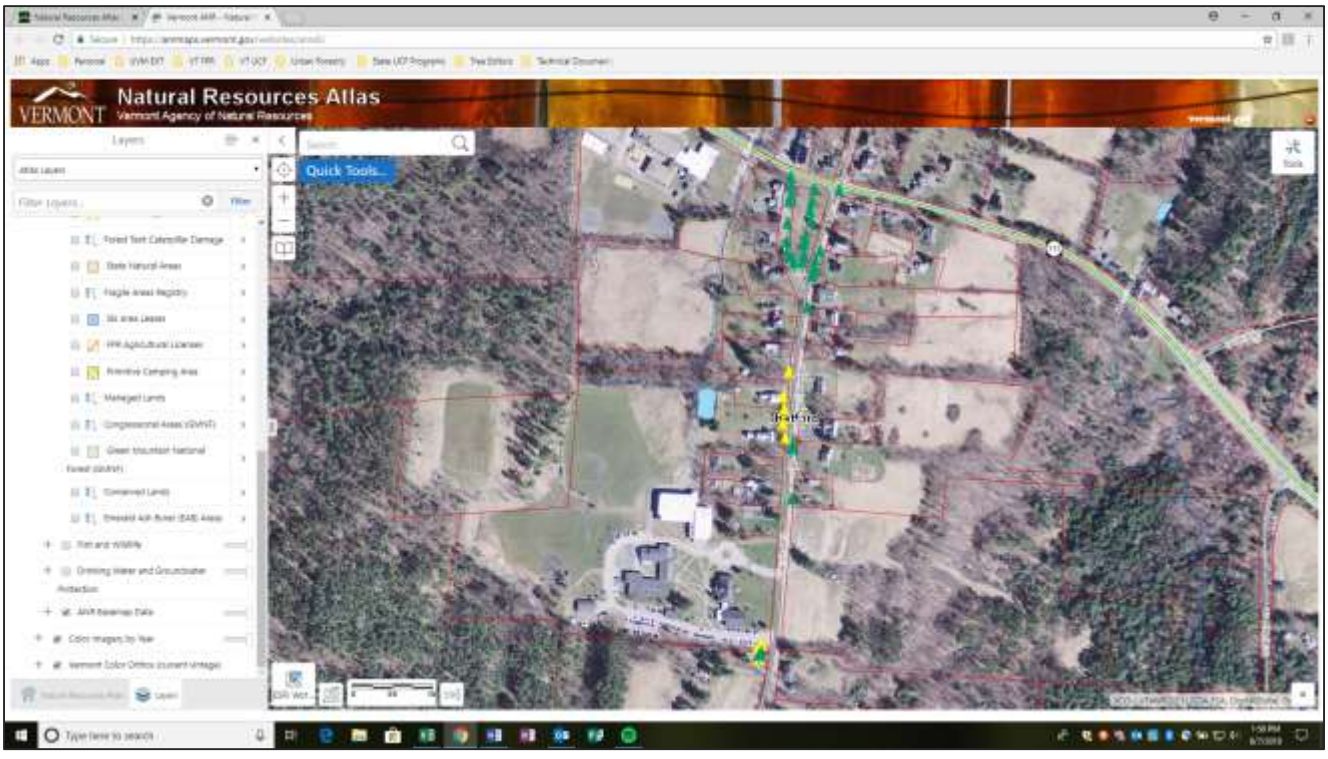
Conclusion

Trees in our downtowns and densely populated landscapes contribute to environmental integrity, social cohesiveness, economic activity, cultural heritage, and overall well-being. This summary public tree inventory report should help the members of the Thetford Hill Village Improvement Society to understand, manage, and steward the public tree population. The recommendations outlined in this report should be considered based on long-term vision and capacity. With monitoring, regular maintenance, and an engaged and informed citizenry, the potential for a healthy, sustainable community forest is possible.

Appendix A: Instructions for Accessing Public Tree Data in ANR Atlas

Anyone with Internet access can view all of Thetford Hill's inventoried public trees by using the Vermont Agency of Natural Resources' (ANR) Atlas mapping tool. Follow these simple steps:

1. Set your web browser to http://anr.vermont.gov/maps/nr-atlas (or search "VT ANR Atlas").
2. Zoom in to Thetford Hill using the +/- scale navigation tool or the "Zoom to Town" function in the dropdown menu in the upper left portion of the map (the tree data layer won't show up unless you are zoomed in to the city-level so that you can see the street names).
3. In the information pane on the left of the screen switch to the "map layers" tab at the bottom.
4. Expand the "Forests, Parks, & Recreation" heading,
5. Click on the box to the left of "Urban Tree Inventory" to load public tree data (it might take a moment for the layer to load).
6. Once you see all the trees on the map, you can zoom in and right-click on any individual tree and click on "What's here"; when you do this, the left information pane will change to give you the basic details for that specific tree.
    - To access all of the information collected on that specific tree, click on the grey text title of the tree in the left pane and a new window will open with the inventory data.
    - In this new window there are three tabs: "Details" and "Attributes" display the same information in different formats and if a photo was taken of the tree, it will show up in the "Attachments" tab.



Appendix B: Maps

1. Thetford Hill Public Trees by Species
2. Thetford Hill Public Trees by Condition
3. Thetford Hill Public Trees by Diameter Class

Species

USDA FSA, DigitalGlobe, GeoEye, CNES/Airbus DS

Condition

USDA FSA, DigitalGlobe, GeoEye, CNES/Airbus DS

Size Class

Copy of ThefordMegadata
0-3"
3-6"
6-12"
12-18"
18-24"
24-30"
30-36"
36-42"
42+"
Potential Tree Planting Location
esri
600ft
USDA FSA, DigitalGlobe, GeoEye, CNES/Airbus DS