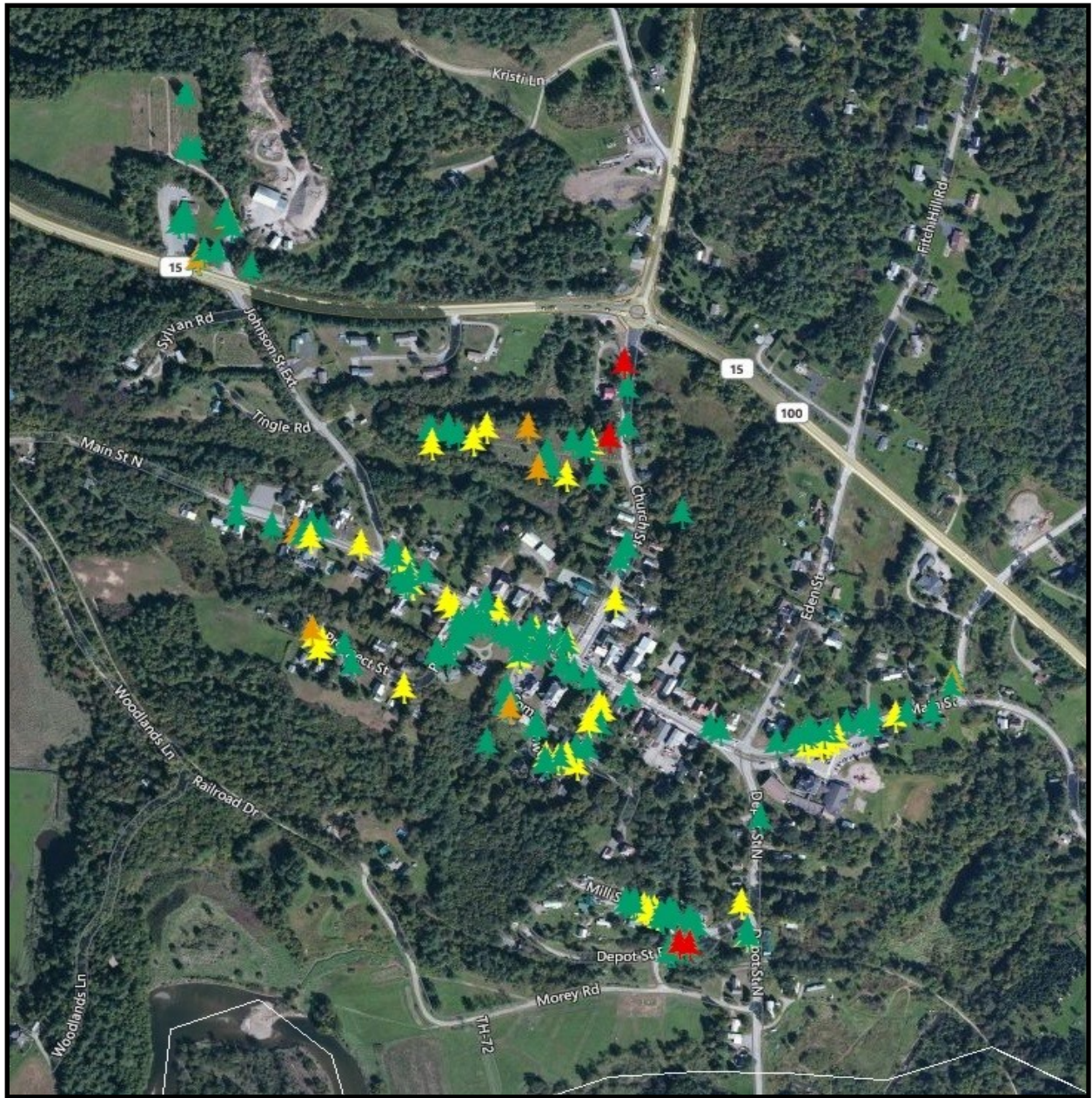


Hyde Park Public Tree Inventory Summary Report



*Prepared for the Village of Hyde Park and the Hyde Park Tree Warden
by the Vermont Urban & Community Forestry Program
June 2017*



Acknowledgements

This summary report was developed by Vermont Urban & Community Forestry Program (VT UCF) staff based on field work conducted by VT UCF staff, VT Department of Forests, Parks, & Recreation staff, and volunteers in the spring of 2017. We would like to thank Jared Nunery, Hyde Park's Tree Warden, for his assistance in initiating this effort and providing VT UCF with information necessary to conduct the public tree inventory.

About the Vermont Urban & Community Forestry Program

The field of forest management is not confined to the natural areas and forests of Vermont, but extends to the populated urban and rural spaces where trees play important roles. The trees in public parks, along roadsides, on town greens, and in municipal forests compose our urban and community forests and merit careful stewardship. VT UCF is a collaborative effort of the Vermont Department of Forests, Parks, & Recreation and University of Vermont (UVM) Extension. The program provides technical and financial assistance as well as educational programs and resources for the management of trees and forests in and around Vermont communities. The mission of VT UCF is ***to lead citizens, businesses, and governments in understanding the value of urban and community forests and promote civic responsibility for and participation in the stewardship of these resources for this and future generations.*** Since 1991, the program has been guided by a small staff and a twenty-member advisory council. The council meets quarterly to share information and advise the program; its members come from various professional associations, non-profits, educational institutions, municipal tree boards and committees, and state agencies. VT UCF works with state and municipal officials, as well as dedicated volunteers and local organizations, to steward the urban forest's ecological integrity and diversity. More information about VT UCF and its programming can be found at www.vtcommunityforestry.org.

Images from the rainy field day of collecting data for the Hyde Park Public Tree Inventory.



Project Summary & Methodology

The goal of the Hyde public tree inventory was to accurately locate and assess town-owned trees within the public right-of-way (ROW) on streets, town-owned properties, and cemeteries in order to establish and maintain a record of the location and the maintenance needs of public trees, and to support future community forest planning. A secondary goal was to locate all lilac bushes within the public right-of-way. 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 Hyde Park’s public trees and will allow the Hyde Park Tree Warden to plan for tree maintenance using a map-based tree inventory tool.

This project was initiated in the spring of 2017. To plan for the public tree inventory, VT UCF staff coordinated with Jared Nunery, Hyde Park’s tree warden, in order to decide what streets and properties should be included in 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 June 6th, 2017, VT UCF staff worked with citizen volunteers, municipal staff, the tree warden, and the Lamoille Country

The Importance of Conducting a Public Tree Inventory

A public tree inventory establishes a record of the town-owned trees present in a municipality. An inventory can provide information about the species, size, health, maintenance needs, and location of each tree. This detailed information allows community leaders to estimate the numerous contributions and management requirements of the trees of which it is in charge. In the event of a disease outbreak or invasive insect infestation, data from an inventory may assist in monitoring and preventing spread, as well as supporting the response to the disease or infestation. An inventory can also help build public support for expanding community forests and to guide future urban planning.

Urban and community trees improve the quality of life for Vermont communities in a variety of ways. The most readily apparent benefit is the aesthetic value that trees provide a street, home, or public space. Along with this beauty is the functional benefit of providing shade in the summertime and blocking wind to reduce heating costs in the wintertime. The presence of trees has been shown to positively affect property values and boosts foot traffic in commercial areas. Parks and tree-lined sidewalks promote physical activity by creating shaded, comfortable outdoor spaces. Many types of urban wildlife depend on trees as sources of food and shelter. Unseen benefits of urban trees include improvements in air quality and temperature regulation through reduction of the heat island effect. Trees can mitigate noise pollution common in an urban environment and can clean and conserve water by controlling run-off. Additionally, urban and community forests create opportunities for education, community engagement, and in some instances can be related to crime reduction. Trees are an integral part of the green infrastructure of a place and contribute to keeping our communities healthier and our everyday lives more fulfilling

Forester to complete an inventory of **190 trees** located within the public ROW of **11 streets**, in **2 cemeteries**, and on **2 town-owned properties**. In total, the inventoried land area was less than 1 square mile, a small fraction of the Town of Hyde Park’s 38 square mile total land area, but encompassed the downtown Village. 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 C.

Table 1: Hyde Park streets and sites included in the public tree inventory.

Street or Site	What was Inventoried	Number of Trees Inventoried
Centerville Road	ROW: from E. Main Street (S) to Route 15 (N)	3
Church Street	Full Road ROW	8
Commonwealth Avenue	Full Road ROW	16
Courthouse Square	Full Road ROW	8
Depot Street	ROW: from intersection with Main Street (W) to Morey Road (S)	5
Depot Street Extension	Full Road ROW	7
East Main Street	Full Road ROW: from Eden Street (W) to Centerville Road (E)	24
Eden Street	Full Road ROW	0
Jeddidah Cemetery (334 VT 15 West)	All planted landscape trees	3
Lanpher Memorial Library (Corner of Main & Church)	All planted landscape trees	3
Main Street	Full Road ROW: from Railroad Drive (W) to intersection with Depot/E.Main (E)	42
Mill Street	Full Road ROW	20
Prospect Street	Full Road ROW	18
Town Clerk Building (334 VT 15 West)	All planted landscape trees	14
Village Cemetery (110 Church Street)	All planted landscape trees	19
We did not inventory the following streets and sites because of time restraints: Johnson Street Extension, Orchard Terrace, and the Hyde Park Fire Department on Centerville Road.		

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 Hyde Park, 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), whether there was visible crown dieback (yes/no), if the tree needed to be pruned (yes/no), additional comments, and the nearest house or building address. In most cases, a picture was also taken of each tree. All inventory data collected on public trees in Hyde Park 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 Hyde Park 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	<ul style="list-style-type: none"> ● <i>Good</i>: full canopy (75-100%), no dieback of branches over 2" in diameter, no significant defects, minimal mechanical damage ● <i>Fair</i>: thinning canopy (50-75%), medium to low new growth, significant mechanical damage, obvious defects/insects/disease, foliage off-color and/or sparse ● <i>Poor</i>: declining (25-50%), visible dead branches over 2" in diameter, significant dieback, severe mechanical damage or decay (over 40% of stem affected) ● <i>Dead</i>: 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	<p>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, blanding, epicormic branching/water sprouts, and/or suspicious exit holes</p> <p>No: no major defects, tree in good or fair condition.</p>
Crown Dieback?	<p>Yes: You would flag a tree for presence of crown dieback if there are twigs/branches that are missing foliage and it looks like the foliage is "dying back" from the tip towards the main stem.</p> <p>No: No visible crown dieback present.</p>
Prune?	<p>Yes: Flag trees for pruning if any of the following signs are present: broken branches, branches are overlapping /touching/growing on each other, the tree is overcrowded, branches are interfering with utility lines or other built infrastructures, the branches can interfere with pedestrians/vehicles/bikes, etc.</p> <p>No: No branch needs to be trimmed.</p>
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.
Photo	Photo of full tree. Additional photos of any significant defects.

Summary of Findings

Community Forest Diversity

- Of the 190 public trees, there are 36 different species in 22 different genera.
- The five most common tree genera by number of trees are *Acer* (maple) at 42%, *Syringa* (lilac) at 12%, *Malus* (apple) at 5%, *Pinus* (pine) at 5%, and *Ulmus* (elm) at 4%. See Figure 1 below. Note that in addition to Japanese tree lilac, lilac bushes were also inventoried.
- Invasive tree pests currently threaten trees in the *Acer*, *Fraxinus*, and *Tsuga* genera in Vermont: the Asian long horned beetle (ALB), the emerald ash borer (EAB), and the hemlock woolly adelgid (HWA), respectively. Combined, these three genera represent nearly a half (46%) of Hyde Park's public tree population.
- The five most common species are sugar maple (*Acer saccharum*) at 31%, lilac bush (*Syringa vulgaris*) at 11%, eastern white pine (*Pinus strobus*) at 5%, American elm (*Ulmus americana*) at 4%, and red maple (*Acer rubrum*) at 4%. A full species list is included in Appendix B.
- Only four public ash (*Fraxinus*) trees were identified in the inventory. As communities in Vermont are encouraged to plan for the arrival of the EAB, the locations and conditions of these trees should be monitored. See Appendix C for a map indicating the specific location of these ash trees. A rural roadside sample inventory of roadside ash trees would be appropriate in order to fully assess the impact that EAB may have on Hyde Park's public tree population.

Genera Distribution of Hyde Park Village Public Trees

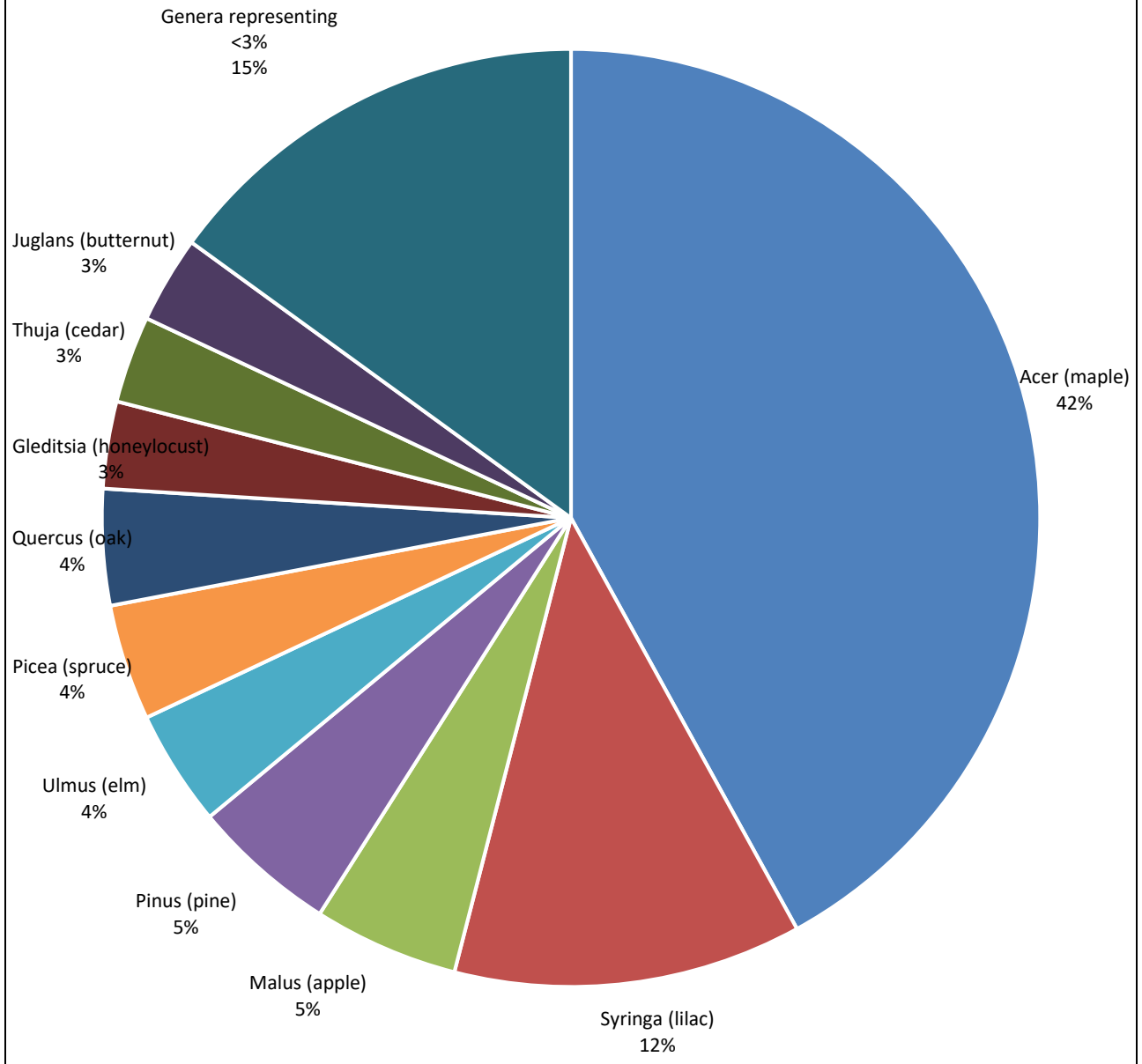


Figure 1: Genera distribution of Hyde Park's public trees.

Species Distribution of Hyde Park Village Public Trees

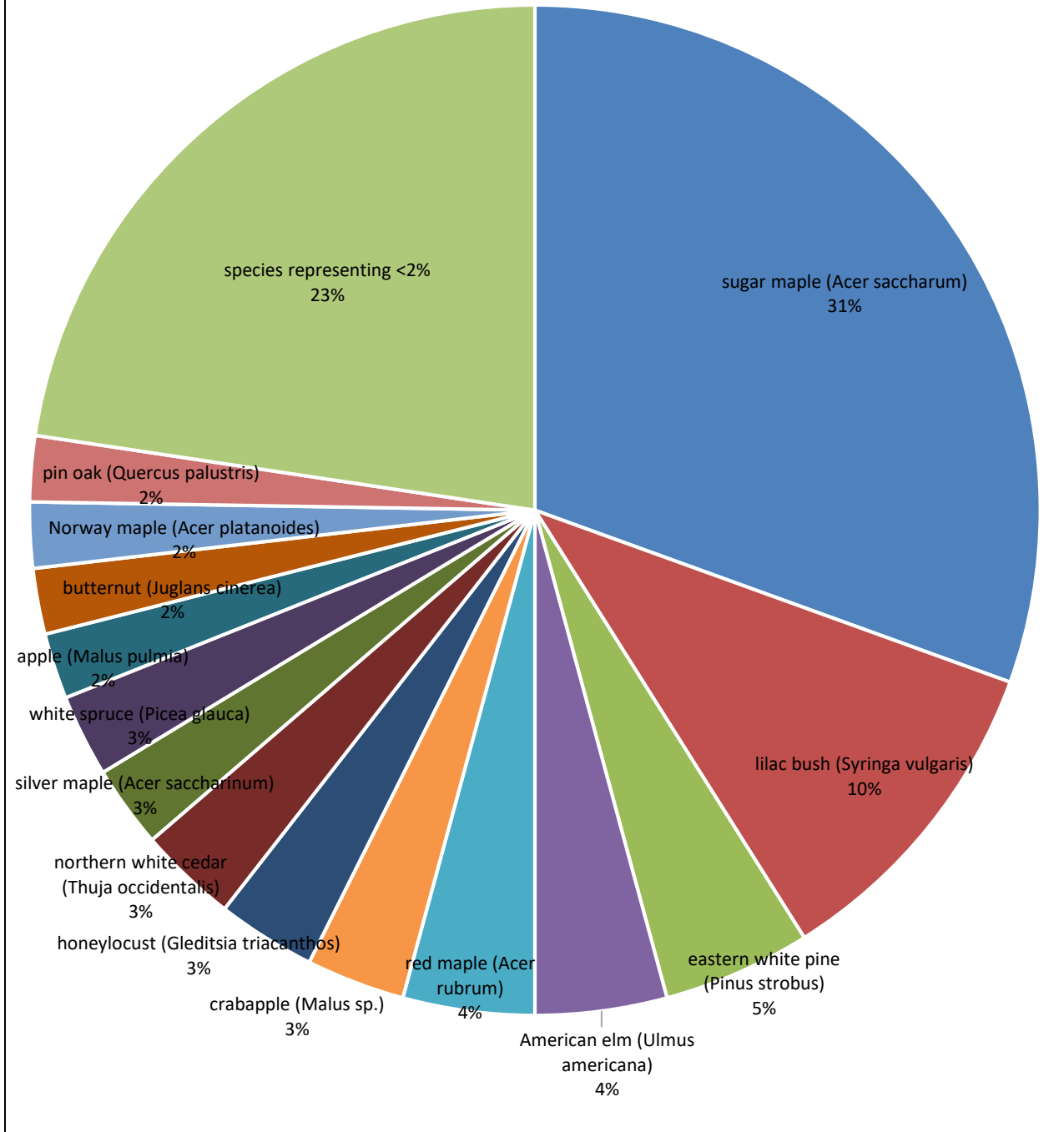


Figure 2: Species distribution of Hyde Park's public trees.

Community Forest Structure

- The inventoried public trees in Hyde Park are represented in the following size classes: 0-3" (26), 3-6" (17) 6-12" (32), 12-18" (56), 18-24" (27), 24-30" (12), 30-36" (9), 36-42" (1), and 42"+ (3). Diameter was not recorded for 7 trees. See figure 3 below.
- Hyde Park's public tree population is relatively well distributed; 71% (131) of the public trees are under 18" in diameter and not yet mature. It is important to note that large, mature, shade trees provide significantly more environmental and human health benefits. Given proper care, Hyde Park's young public tree population will mature and its ecosystem services value will increase with time.
- Efforts should be made to protect and maintain the 13 large public trees (>30") in Hyde Park.
- The largest public trees inventoried in Hyde Park are two sugar maples at the Village Cemetery and one northern red oak on Mill Street.

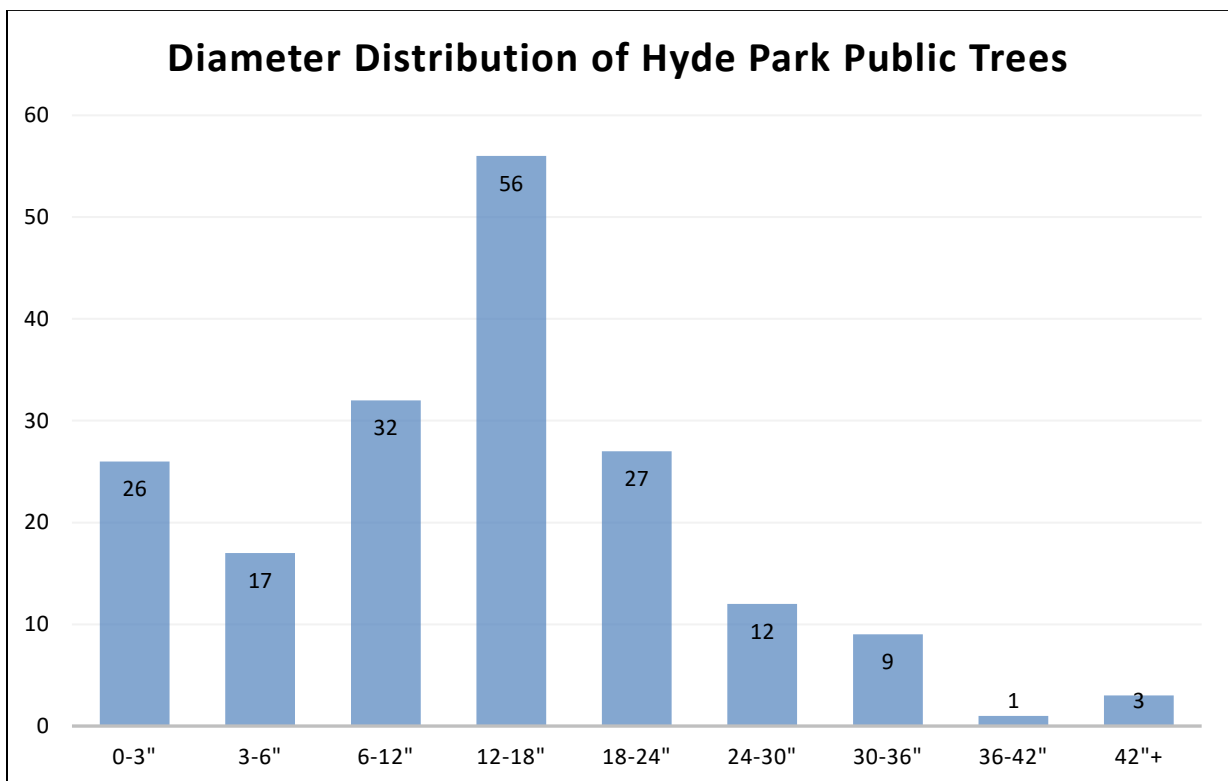


Figure 3: Diameter distribution of Hyde Park's public trees.

Community Forest Health

- The majority of Hyde Park’s public trees (137, or 72%) were assessed as being in “Good” condition. Of the remaining trees, 39 (21%) were considered to be in “Fair” condition, 9 (5%) were in “Poor” condition, and 4 trees (2%) were found to be “Dead”. Condition was not collected for one tree (Figure 4). The 4 dead trees should be prioritized for removal. All but one of the dead trees are under 12” in diameter. The dead trees are located on Depot Street Extension (2), Church Street (1), and at the Village Cemetery (1).
- 53 (27%) public trees were assessed to be in need of monitoring by a Certified Arborist, the Hyde Park Tree Warden, or another qualified individual (Figure 5). 2 trees were not assessed for 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 people/infrastructure/vehicles or other property,
 - The tree is growing into utility wires, or
 - The tree is dead or in poor condition.
- 48 (29%) of the public trees were assessed as showing signs of crown dieback (Figure 5). 6 trees were not assessed for presence of dieback. Crown dieback is essentially the presence of dead branch tips, and can be a symptom of a larger issue. Often, as a tree is declining or in stress, dieback is the first noticeable indication.
- 41 (23%) of the public trees were assessed to be in need of pruning (Figure 5). 9 trees were not assessed for need of pruning. For the most part, these trees had dead branches in their crown or had been improperly pruned in the past and were in need of corrective pruning.
- Maps of both the trees in need of monitoring and the trees recommended to be pruned are included in Appendix C.

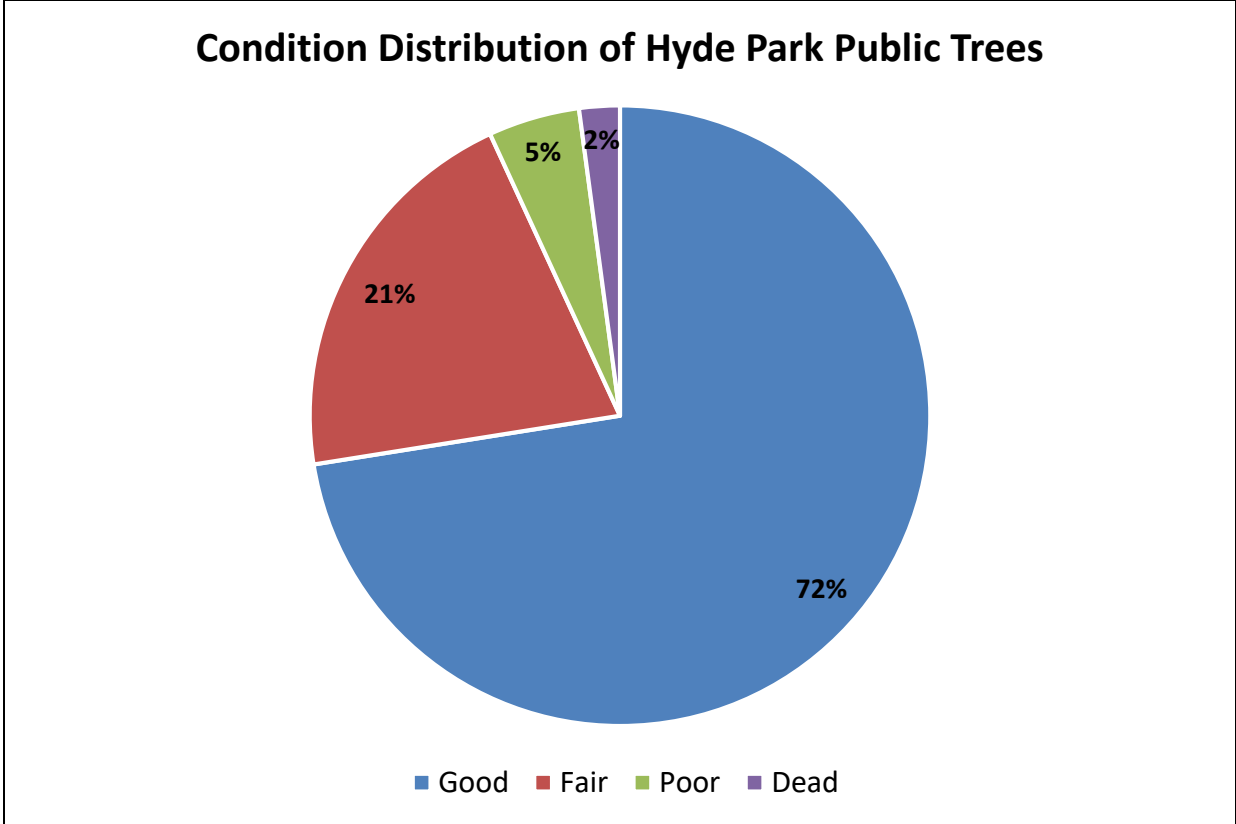


Figure 4: Condition class distribution of Hyde Park’s public trees.

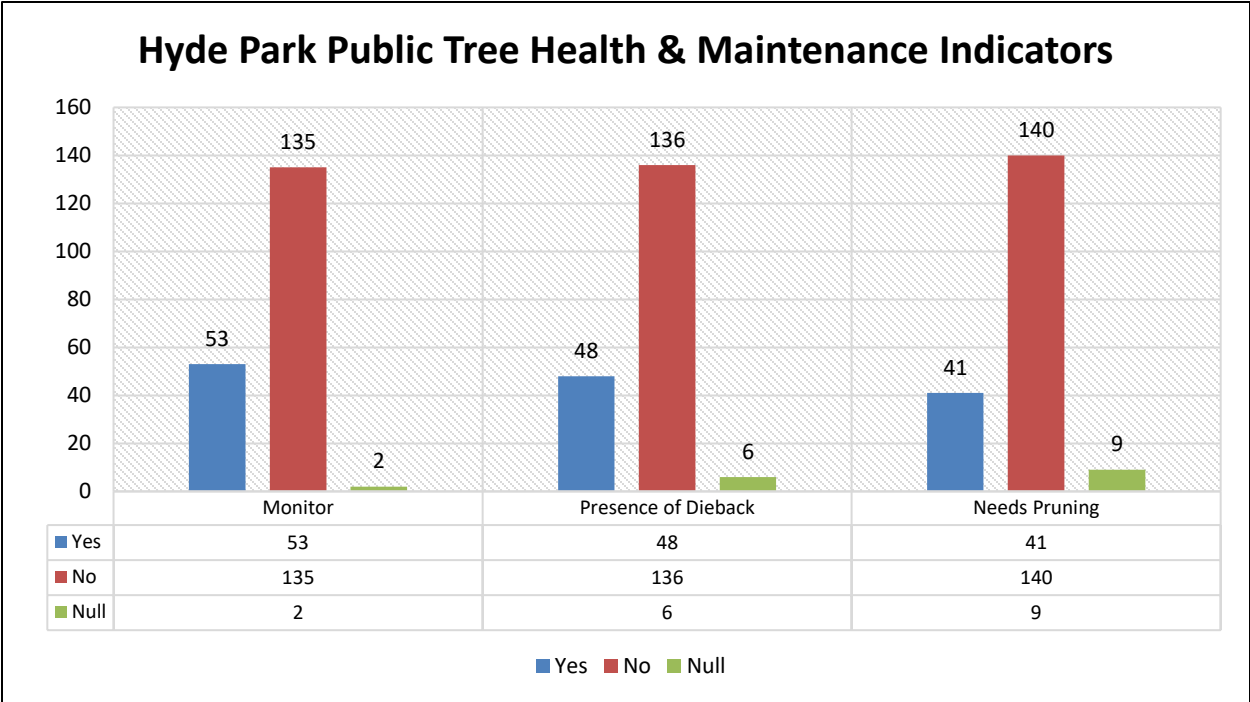


Figure 5: Maintenance needs and health indicators of Hyde Park’s inventoried public trees. Data was not collected for trees in the N/A category because of user error.

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 Hyde Park public tree inventory, our priority recommendations are:

- Prioritize the removal of the 4 dead trees within the public right-of-way or on public land in Hyde Park.
- Prioritize establishing a regular visual inspection cycle for the 53 public trees that were identified as in need of monitoring by a Certified Arborist or the Hyde Park Tree Warden. 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.
- Specifically, assess the pruning needs of the 41 public trees identified. Many of these trees have dead wood or broken branches in their crown, some are in need of structural pruning, and some merely need corrective pruning, as they have been improperly pruned in the past. Ensure that whomever performs structural pruning is properly trained; to access a list of ISA Certified Arborists in the area, visit www.isa-arbor.com/findanarborist/arboristsearch.aspx
- There are not many mature public trees in Hyde Park; promote their health and integrity with a systematic and regular inspection program.
- In consideration of the high number of public trees in the Acer genus, when planting trees in the future strive for diversification. Plant species that are under-represented in Hyde Park, but have demonstrated success, such as linden, honeylocust, pin oak or northern red oak. Also consider species such as northern hackberry, swamp white oak, or American hornbeam, which are not currently represented at all in the public tree population. Refer to VT UCF's Tree Selection Tool to choose the right tree for the right place, at vtcommunityforestry.org/resources/tree-care/tree-selection.

- Prepare for the arrival of EAB and ALB by regularly revisiting Hyde Park’s strategic invasive forest pest community preparedness plan. Refer to the VT UCF website’s community preparedness page at vtcommunityforestry.org/community-planning/tree-pests for resources and guidance in the community preparedness process and considerations. Continue to collaborate with the Regional Invasive Insect Preparedness Team.
- Continue to engage citizens in Hyde Park that care about trees; promote educational opportunities, such as VT UCF’s Stewardship of the Urban Landscape course, the Forest Pest First Detector training, the annual Vermont Arbor Day Conference and consider organizing tree maintenance opportunities for volunteers.
- Consider developing a tree policy or tree ordinance specific to Hyde Park in order to establish locally-defined provisions for the care and stewardship of public trees.

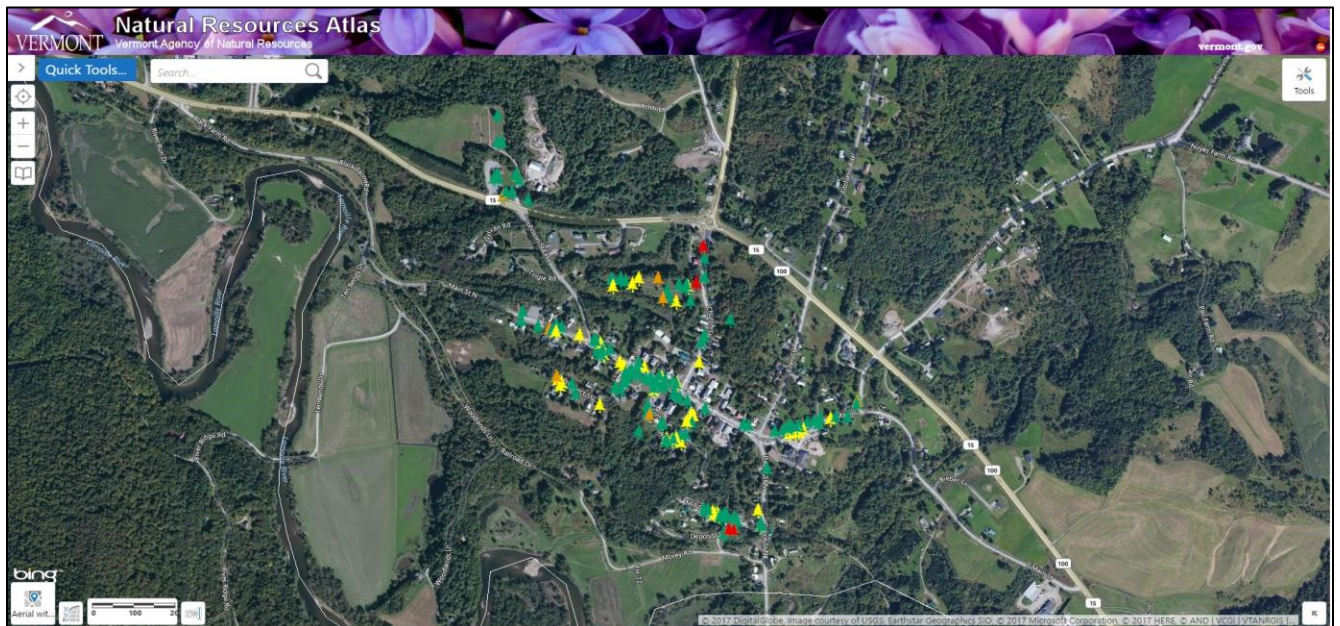
Conclusion

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 leaders and citizens of Hyde Park to understand, manage, and steward the public tree population. The recommendations outlined in this report should be considered by the Hyde Park Tree Warden 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 Hyde Park'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 Hyde Park 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.
 - o 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.
 - o 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: Full Species List of Hyde Park Public Trees


























Species: common and scientific name	Number of public trees inventoried in Hyde Park	Percent of total public tree population
sugar maple (<i>Acer saccharum</i>)	58	30.53%
lilac bush (<i>Syringa vulgaris</i>)	20	10.53%
eastern white pine (<i>Pinus strobus</i>)	9	4.74%
American elm (<i>Ulmus americana</i>)	8	4.21%
red maple (<i>Acer rubrum</i>)	8	4.21%
crabapple (<i>Malus sp.</i>)	6	3.16%
honeylocust (<i>Gleditsia triacanthos</i>)	6	3.16%
norther white cedar (<i>Thuja occidentalis</i>)	6	3.16%
silver maple (<i>Acer saccharinum</i>)	5	2.63%
white spruce (<i>Picea glauca</i>)	5	2.63%
apple (<i>Malus pulmia</i>)	4	2.11%
butternut (<i>Juglans cinerea</i>)	4	2.11%
Norway maple (<i>Acer platanoides</i>)	4	2.11%
pin oak (<i>Quercus palustris</i>)	4	2.11%
northern catalpa (<i>Catalpa speciosa</i>)	3	1.58%
eastern hemlock (<i>Tsuga canadensis</i>)	3	1.58%
Japanese tree lilac (<i>Syringa reticulata</i>)	3	1.58%
maple (<i>Acer sp.</i>)	3	1.58%
northern red oak (<i>Quercus rubra</i>)	3	1.58%
white fir (<i>Abies concolor</i>)	3	1.58%
American basswood (<i>Tilia americana</i>)	2	1.05%
green ash (<i>Fraxinus pennsylvanica</i>)	2	1.05%
bigtooth aspen (<i>Populus dentata</i>)	2	1.05%
Colorado blue spruce (<i>Picea pungens</i>)	2	1.05%
boxelder (<i>Acer negundo</i>)	2	1.05%
pin cherry (<i>Prunus pennsylvanica</i>)	2	1.05%
quaking aspen (<i>Populus tremuloides</i>)	2	1.05%
tamarack (<i>Larix laricina</i>)	2	1.05%
white ash (<i>Fraxinus americana</i>)	2	1.05%
American beech (<i>Fagus grandifolia</i>)	1	0.53%
balsam fir (<i>Abies balsamea</i>)	1	0.53%
bitternut hickory (<i>Carya cordiformis</i>)	1	0.53%
black walnut (<i>Juglans nigra</i>)	1	0.53%
juniper (<i>Juniperus virginiana</i>)	1	0.53%
river birch (<i>Betula nigra</i>)	1	0.53%
yew (<i>Taxus brevifolia</i>)	1	0.53%
	190	100.00%

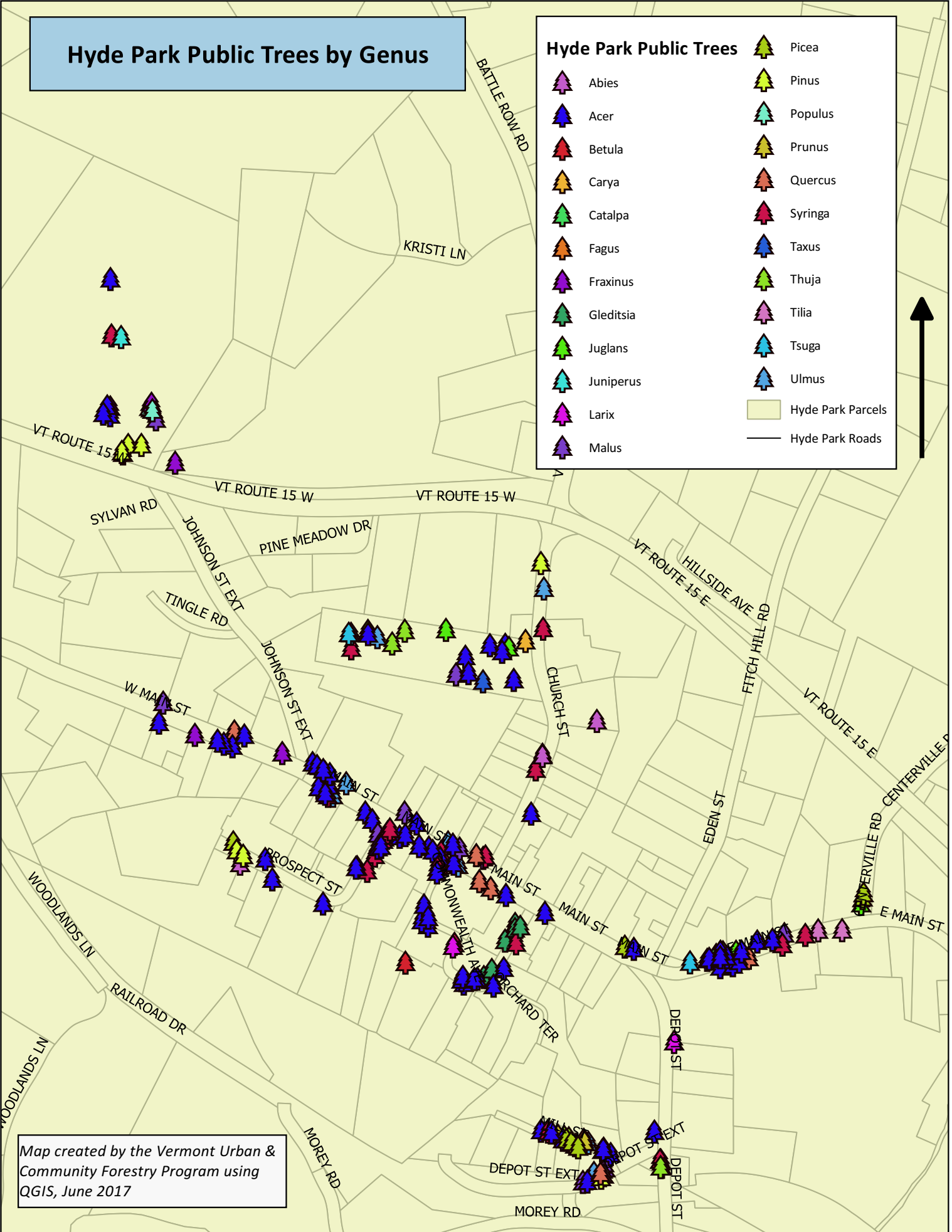
Appendix C: Maps

1. Hyde Park Public Trees by Genera
2. Hyde Park Public Trees by Condition
3. Hyde Park Public Trees by Diameter Class
4. Hyde Park Public Ash (*Fraxinus*) Trees
5. Hyde Park Public Trees in Need of Monitoring
6. Hyde Park Public Trees in Need of Pruning

Hyde Park Public Trees by Genus

Hyde Park Public Trees







- | | | | |
|---|-----------|---|-------------------|
|  | Abies |  | Picea |
|  | Acer |  | Pinus |
|  | Betula |  | Populus |
|  | Carya |  | Prunus |
|  | Catalpa |  | Quercus |
|  | Fagus |  | Syringa |
|  | Fraxinus |  | Taxus |
|  | Gleditsia |  | Thuja |
|  | Juglans |  | Tilia |
|  | Juniperus |  | Tsuga |
|  | Larix |  | Ulmus |
|  | Malus |  | Hyde Park Parcels |
| | |  | Hyde Park Roads |

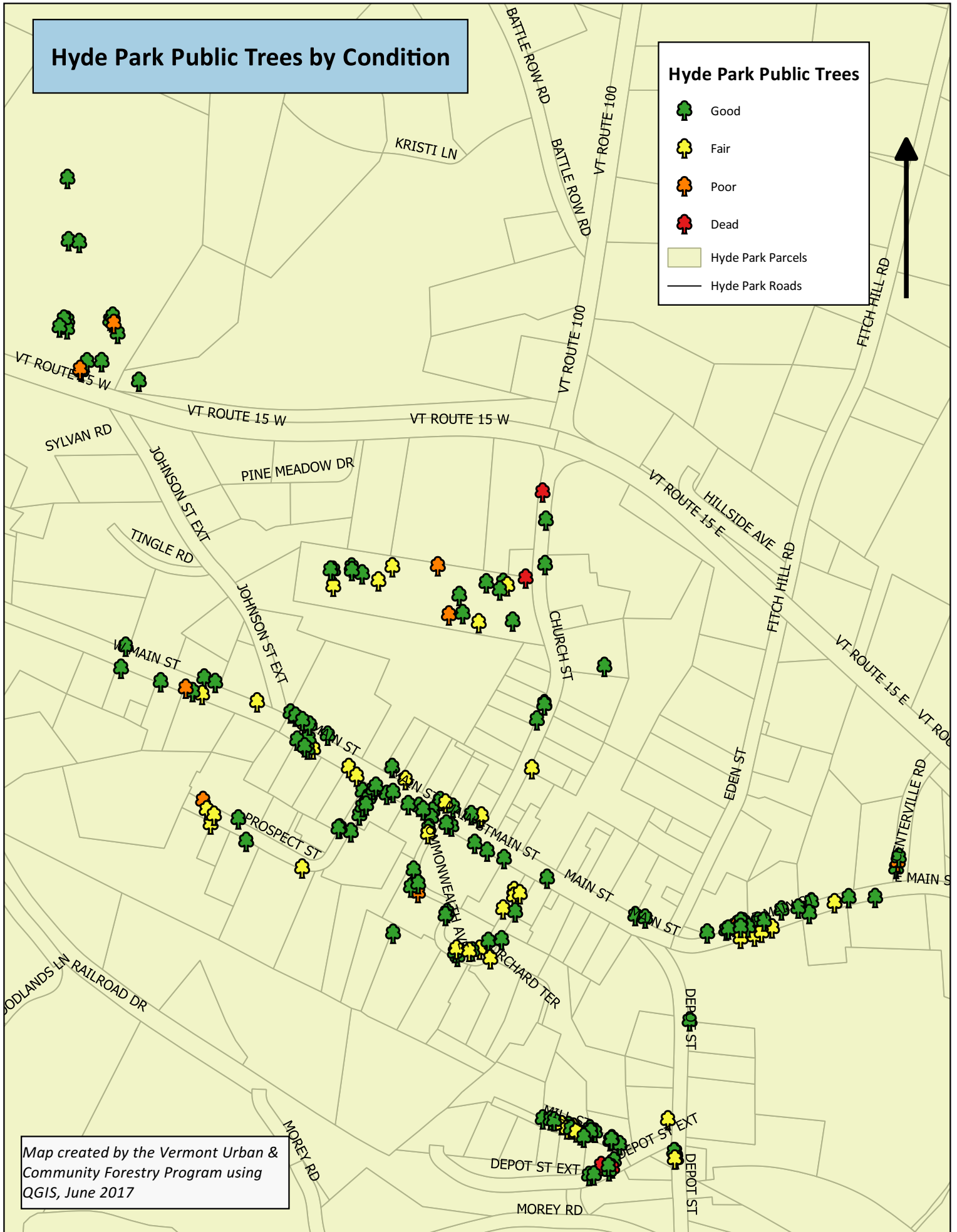


Map created by the Vermont Urban & Community Forestry Program using QGIS, June 2017

Hyde Park Public Trees by Condition

Hyde Park Public Trees










-  Good
-  Fair
-  Poor
-  Dead
-  Hyde Park Parcels
-  Hyde Park Roads





Map created by the Vermont Urban & Community Forestry Program using QGIS, June 2017

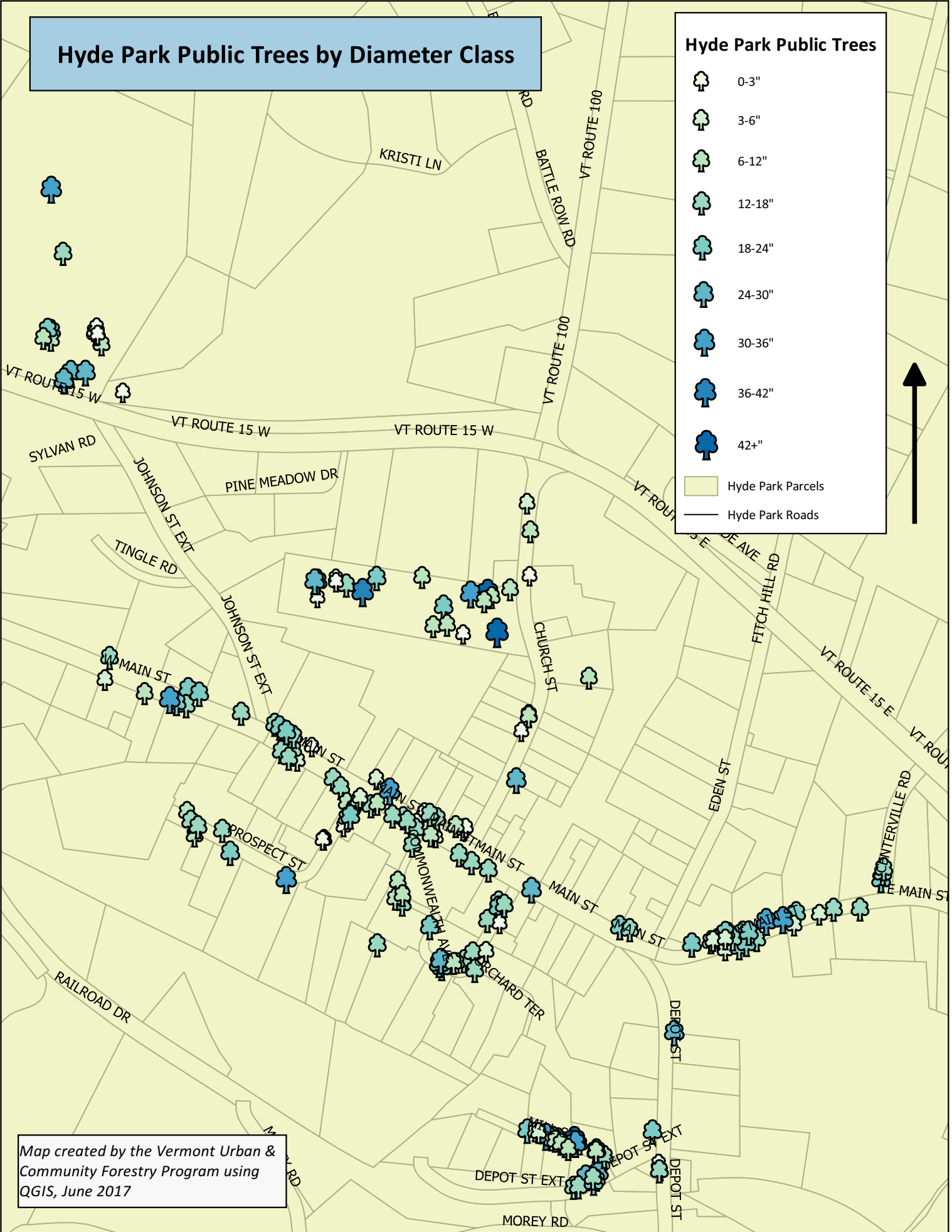
Hyde Park Public Trees by Diameter Class

Hyde Park Public Trees

-  0-3"
-  3-6"
-  6-12"
-  12-18"
-  18-24"
-  24-30"
-  30-36"
-  36-42"
-  42+"




 Hyde Park Parcels

 Hyde Park Roads



Map created by the Vermont Urban & Community Forestry Program using QGIS, June 2017




Hyde Park Public Ash (Fraxinus) Trees

-  Hyde Park Public Ash Trees
-  Hyde Park Parcels
-  Hyde Park Roads



Map created by the Vermont Urban & Community Forestry Program using QGIS, June 2017




Hyde Park Public Trees to Monitor

-  Hyde Park Public Trees to Monitor
-  Hyde Park Parcels
-  Hyde Park Roads



Map created by the Vermont Urban & Community Forestry Program using QGIS, June 2017

Hyde Park Public Trees to Prune

-  Hyde Park Public Trees to Prune
-  Hyde Park Parcels
-  Hyde Park Roads



Map created by the Vermont Urban & Community Forestry Program using QGIS, June 2017