The Grove - Glenview Park District
Tree Inventory Update 2024

Prepared By:

Leslie Delles, Municipal Forestry Consultant # IL 9199-AM TRAQ

January 27, 2025

GREAT LAKES URBAN FORESTRY

MEMBER ISA CERTIFIED ARBORIST ISA MUNICIPAL SPECIALIST ISA

Introduction

In 2016, Glenview Park District and Graf Natural Resources Management and GIS, now doing busines as Great Lakes Urban Forestry (GLUF), partnered to complete a tree inventory at The Grove National Historic Landmark. This project included a stem-by-stem record of all trees in the managed (landscaped) areas of The Grove, an inventory of all trees 12" DBH or larger in the vast native woodland areas of The Grove, and a survey of any trees 6" DBH or larger that stand along the trail systems that wind through The Grove's woodlands. In 2022, GLUF completed the first of four phases, Zone 1, of a complete update of the tree inventory at The Grove. In November of 2023, Zone 2, the second phase of the update, was completed and in Decemeber 2024 – January 2025, the third phase in Zone 3 was conducted. As in Phases 1 & 2, this third phase update noted any trees that had been removed since the last inventory, added in any new plantings or other significant trees not found in the original inventory, and completed a full update on all remaining trees. This full update included remeasuring the DBH, assessing tree defects and condition, making recommendations on tree maintenance, and updating all other relevant data fields contained in the updated inventory collection file.

This 3rd phase inventory updated 1,200 trees, bringing the total number of inventoried trees at The Grove to 5,241 trees: 233 in the managed areas and 5,008 in the unmanaged areas. A conservative estimate of the total number of trees of all sizes on the entire property would be approximately 12,000-15,000. An impressive remnant of an Oak and Hickory woodland dominates the landscape at The Grove. Other less dominant biomes include low-lying wet/mesic floodplain areas and pockets of remnant native prairie. The grounds of The Grove are made up of precious ecosystems; Glenview Park District is fortunate to be a steward in the preservation of this environmental treasure. The following report discusses in more detail the characteristics and condition of The Grove's woodlands as well other observations and recommendations for preservation and ecological restoration at The Grove in the future.

Collection Parameters

An updated collection file was implemented for this update in order to bring The Grove's data in agreement with the existing Glenview Park District data parameters. The following data was collected for each updated tree.

PARK
For the purposes of this inventory, the name of the park was The Grove.

SPECIES
All tree species are listed using common and botanical names and were identified to the species level. Specific cultivars, hybrids, or varieties were not identified.

DBH
Trees were measured using DBH (Diameter at Breast Height, 4.5' above ground level), a standard forestry measure of tree diameter, using a forester's DBH tape. This method of measurement provides the most accurate reading of tree diameter, which can be highly variable depending on the dimension in which it is linearly measured.

CROWN HEIGHT/ CROWN SPREAD
Crown Height and Crown Spread are broadly estimated to approximately the nearest 10 foot interval by a combination of pacing from the drip line to the trunk, and utilizing a combination of clinometers, laser rangefinders, landmarks, and professional judgment. This data can be utilized for 3-Dimensional Mapping, as well as for better calculating rainfall interception rates, carbon sequestration, and other such factors.

CONDITION
Condition ratings (1-5) are based on a normal standard distribution. Much like in academic circles, we expect the greatest number of trees in the average category (3), fewer trees in the good and poor categories (2 and 4, respectively), and the fewest number of trees in the excellent and very poor categories (1 and 5, respectively). Condition is a continuous variable, meaning that anywhere along the curve we supplied, you should be able to estimate the number of trees that are (e.g.) a 2.5 condition, even though condition was only recorded as whole number integers. (see table below)

Condition 1	**Excellent** – Tree has no observable defects, wounds, diseases, and has textbook perfect form for the species. In addition, since young trees have a tendency to be trouble free and homogenous, a condition 1 tree must by definition be a minimum of 16" DBH. These are legacy trees, and as such are rare.
Condition 2	**Good** – Tree may have a small amount of deadwood, or a very limited number of minor defects. The overall form of the tree must be good, and consistent for the species in question. These trees should also be a minimum of 8" DBH for the reason listed above. Often the difference between condition 2 and 3 is form or growth habit.
Condition 3	**Average** – Tree has moderate but acceptable amounts if deadwood, wounds, or other defects, but is generally healthy. A wide variety of forms is acceptable for this group, which is meant to define the middle ground around which better or worse trees can be defined and identified.
Condition 4	**Poor** – Tree has defects, deadwood, wounds, disease, etc. that have to the potential to cause a need for removal. Very poor form or architecture can put an otherwise healthy tree in this category as well, due to the potential for tree or root failure.
Condition 5	**Very Poor** – Tree must be removed. Physical or Health defects are too far gone for the tree to be reasonably saved. Like condition 1 trees, these are relatively rare, as generally trees that are getting to this level are removed before they can get there.

ROOTS

Roots are evaluated as part of the Standard Defects Package "at a glance"

Normal	Roots appear normal
Exposed	Roots are exposed and can be damaged by mowers, etc.
Girdling	Observed girdling roots or severe trunk flattening
Compacted	Roots showing observable signs of underground root compaction
Wounded	Roots showing wounds
Multiple Issues	Roots showing a combination of above issues

WOUNDS

Wounds are part of our standard defects package, and include, but certainly aren't limited to: Splits, cavities, callus tissue, holes, or any other mechanical damage. Categorically, "None" was still used if the damage was minor enough that it would not affect the tree.

None	Tree has no wounds
Moderate	Tree has moderately bad wounds
Severe	Tree has severe wounds

ROT

Rot was evaluated as part of the Standard Defects Package, and includes, but certainly isn't limited to: mushrooms, dry rot, brown rot, bleeding, basal rot, cankers, or generally anything that appears to have been caused by an organism, and not mechanical damage. In this case, even small amounts of rot were noted as being "moderate", due to the strong possibility that there is much more damage that cannot be seen with the naked eye.

None	No rot visible whatsoever
Moderate	Modest amounts of observable damage was present
Severe	Severe rot was observed

DEADWOOD

Deadwood was evaluated as part of the Standard Defects Package. Generally, trees with a small amount of deadwood fell into the "None" category. This is a scalable evaluation. In other words, 6 dead branches would be "Severe" on a 4" DBH tree, "Moderate" on a 10" DBH tree, and "None" on a 25" DBH tree.

None	Tree contained 0-10% deadwood, by ocular estimate
Moderate	Tree contained 11-30% deadwood, by ocular estimate
Severe	Tree contained more than 31% deadwood by ocular estimate

MAINTENANCE RECOMMENDATIONS

Maintenance recommendations are provided to assist in managing the tree population. They are very general guidelines for pruning and care. See the table below.

Cyclical Prune	Tree is in fair to good health, and will require standard pruning or maintenance on a 3-5 year cycle.
Monitor	Tree has an indiscernible defect, or shows signs of developing issues or general decline which must be observed.
Priority Prune	Tree has not been properly pruned during its developmental years, or suffered damage. Typically overgrown, and in need of pruning sooner than a 3-5 year standard cycle.
Risk Assessment	Tree has deadwood or structural defects which are at risk of threatening property, utilities, or human life. These trees need a more thorough inspection to determine if they require removal or other remedial action.
Remove	Tree must be removed. This is only utilized if removal is truly the only reasonable option. For trees that are on the borderline, or may require a Risk Assessment, the phrase "consider removal" will appear in the comments field.
Hazard Prune	Tree part poses a risk and should be pruned as soon as possible.
Hazard Remove	Tree poses a risk and should be removed as soon as possible.
Let Stand - Wildlife	Dead tree can be left standing to serve as wildlife habitat or to decompose naturally.
Priority Maintenance	Tree requires maintenance not related to pruning. Examples include mulching, leaning new plants, removal of a girdling object, etc.
Clear Brush	Invasive understory should be cleared.

OAK DECLINE / EAB DAMAGE

This was an ocular estimate of the level of Oak Decline or Emerald Ash Borer (EAB) observed.

None	No decline/damage was OBSERVED at the time of inspection
Moderate	Tree either exhibited direct evidence of decline/damage OR defects that could possibly be consistent with decline/damage at the time of inspection, even if there was a probability that the defects were not related
Severe	Tree exhibited severe decline/damage signs or symptoms at the time of inspection

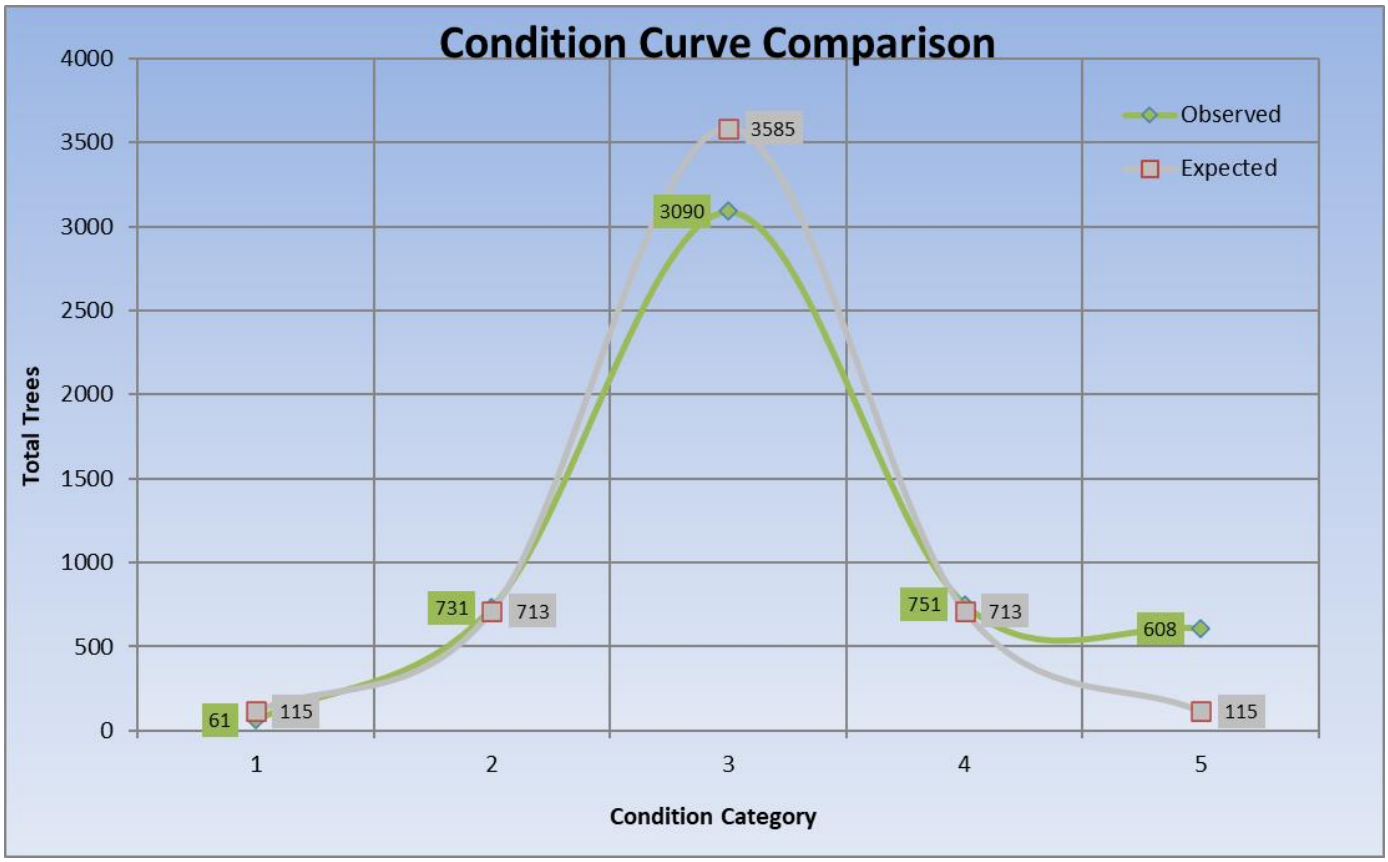
COMMENTS

Comments were included as a courtesy to denote any conditions worthy of note, such as weak trunk unions, interference with utilities or streetlamps, limited growing space, poor form, or any other information GLUF felt was valuable. These comments are standardized as much as possible, though certain situations certainly exist where nonstandard comments were utilized.

The Grove Tree Inventory Statistics and Analysis

Population Overview 2016 vs 2024

	2016	2024
Total Number of Active Trees	5,434	5,241
Total Trees Updated in 2024- Zone 3 Only	N/A	1,200
Total Number of Species - All Zones	48	59
Total Trees in Unmanaged Areas - All Zones	5,228	5,008
Total Trees in Managed Areas - All Zones	206	233
Number of Trees Removed Since Original Inventory	N/A	473
Number of Trees Added to Inventory During 2023 Update	N/A	75
Total Diameter Inches - All Zones	102,554"	100,880"
Average Tree Diameter - All Zones	18.87"	19.25"
Average Tree Height - Zone 1-3 Only	N/A	45.88'
Average Tree Spread - Zone 1-3 Only	N/A	23.90'
Total Canopy Volume - Zone 1-3 Only	N/A	52,394,284 cu ft
Average Canopy Volume - Zone 1-3 Only	N/A	14,103 cu ft
Average Tree Condition (Unweighted - All Trees)	3.25 (Below Average)	3.21 (Below Average)



This curve represents the distribution of trees in each of the categories enumerated above. Deviations from the expected normal standard distribution can serve as a useful tool in analyzing the overall health of a tree population, and for this reason, we have included a theoretical curve representing a normal distribution so that comparisons can readily be made. The green line with green labels represents what we observed in the field, and the grey line with grey labels is the predicted normal distribution. The condition curve for The Grove's inventory indicates a tree population that is in somewhat below average condition. As will be discussed later in this report, the overall tree conditions of a woodland ecosystem such as the one found at The Grove cannot be judged by the same standards as would a managed tree population in a traditional park district or municipal setting. While managed municipal and park district trees are likely to receive regular pruning and maintenance, a woodland population is maintained by the cycles of nature. This means that trees that are dead or in poor condition often remain standing as habitat for wildlife or they are allowed to decompose into organic matter that enriches woodland soils with nutrients. Another important thing to mention is that since only Zones 1-3 have been updated, the statistics analyzed in this report do not reflect fully updated data.

The Condition 1, or specimen trees, were lower than would be predicted by the standard distribution alone, but we always expect that the specimen trees will come in lower than their statistical norm because of their rarity. According to our rating system, a Condition 1 tree is defined as having no observable defects, wounds, diseases, and has textbook perfect form for the species. In addition, since young trees tend to be trouble free and homogenous, a Condition 1 tree must, by definition, be a minimum of 16" DBH. Though a significant number of mature trees at The Grove meet the DBH threshold for the Condition 1 category, many have been faced with a lifetime of limited growing space due to their proximity to other trees and have therefore developed less than ideal form which disqualifies them from being considered as Condition 1. It should be mentioned that some of The Grove's trees in the Condition 1 category did have deadwood present, but since woodland trees are not maintained as managed tree populations typically are, we were slightly more lenient in the Condition 1 designations. The presence of 61 specimen trees in a woodland ecosystem such as The Grove is an impressive number and is indicative of a spectacular mature tree population.

The Condition 5, or dead trees, came in much higher than the expected norm, but this is what would be expected in a woodland tree population since dead trees are often left to serve as wildlife habitat as they decay and subsequently contribute to the nutrient cycle. Many of the 608 trees in this category are made up of Green Ash trees that succumbed to EAB infestation, which skews this data significantly. A number of these trees have already fallen but some could

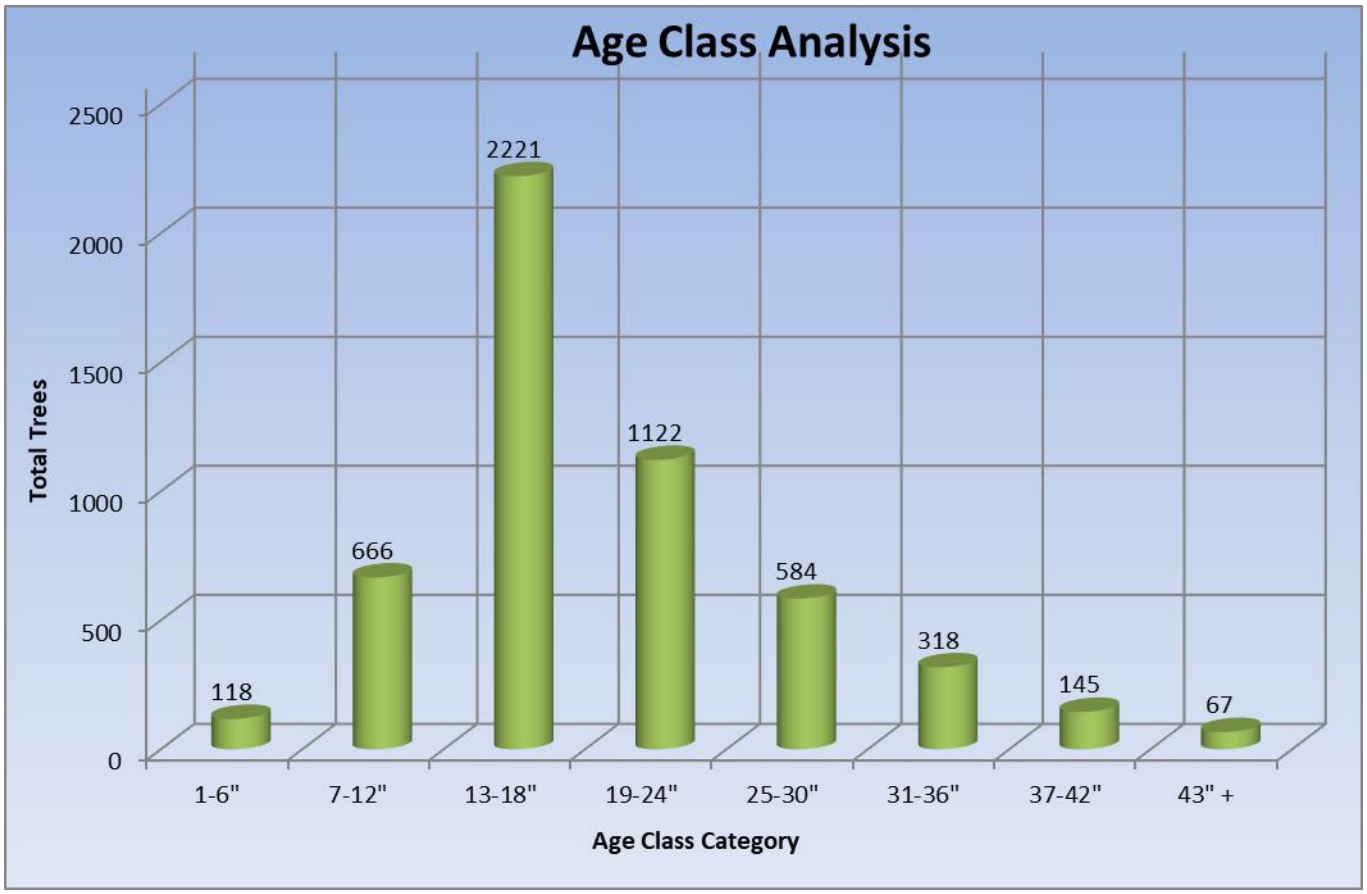
remain standing unless they are along trails or near managed areas where they could pose a risk. It is important to mention that the three phases of the inventory update conducted thus far show that 473 trees have been removed since 2016.

The Condition 2, or above average trees, are slightly higher than statistical analysis would predict which is a positive trait of the population. According to our rating system, a Condition 2 tree should have a DBH of 8" or larger, may have a limited number of minor defects, and have an overall good form that is consistent for the species in question. Since woodland trees are often growing closely to one another, they are likely to be faced with limited growing space which leads to the development of poor canopy form. As was the case for the Condition 1 category, some leniency was granted to semi-mature trees that were in overall above average condition, however, poor tree architecture often would disqualify trees from being designated as Condition 2.

The Condition 4 trees came in slightly higher than what would be statistically expected. These trees are primarily trees with excessive deadwood and/or decay, large wounds, very poor architecture, or other significant structural defects. Like the Condition 5 trees discussed above, most of The Grove's Condition 4 trees should be left standing unless they pose a risk to trails or managed areas.

The trees in the Condition 3, or average, category came in lower than the expected norm. The reason for this is because the inflated number of trees in the Condition 5 category has skewed the condition curve toward the below average side.

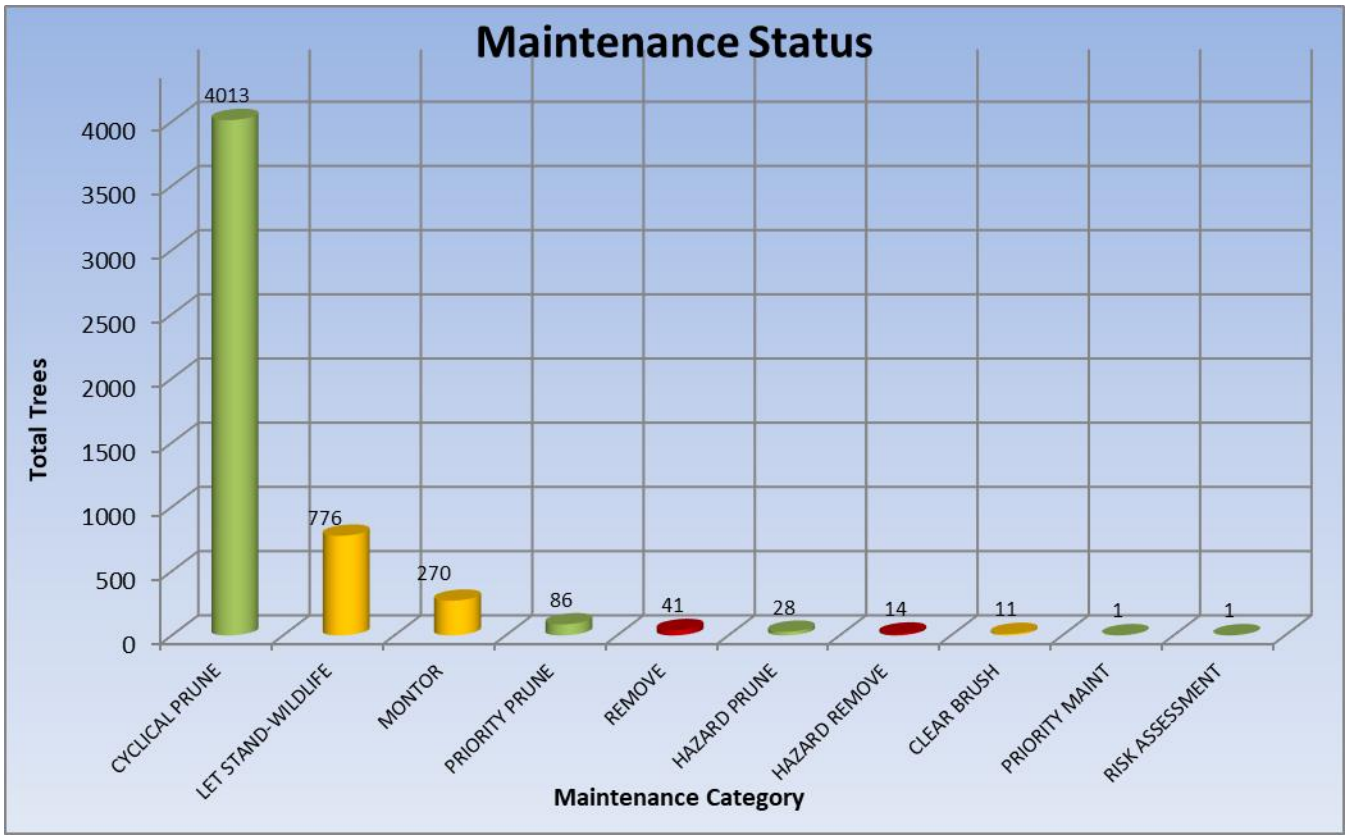
In summary, the condition curve for The Grove's managed and mature unmanaged tree population reflects an overall healthy native Oak/Hickory woodland made up of a significant number of spectacular and majestic mature trees.



Since the number of trees in the unmanaged woodland of The Grove is very high, the scope of this project included only the inventory of unmanaged trees with a DBH of 12" or above (or those 6" DBH or above along trails or adjacent to managed areas), so at first glance this age class analysis graph is misleading since it characterizes the population as

having few young trees. Since this mature tree inventory of the unmanaged areas paints an incomplete picture, it is recommended that Glenview Park District pursue our proposal to perform a sampling inventory of the remaining trees to get a better idea of the distribution and tree count of the entire woodland population. This would be done by establishing approximately 25 evenly distributed sampling plots, each 20'x 20', in which every tree species and size would be counted, but not GPS inventoried. This information would be utilized to create a map of tree species distribution to lay underneath the inventoried trees and provide GPD with a clearer idea of the true composition of The Grove's woodland, without an unnecessary investment in individually locating smaller trees.

The 118 trees in the 1-6" DBH category are almost all managed trees in landscaped areas since trees inventoried in the unmanaged areas had to be at least 12" DBH. The 7-12" DBH category are largely unmanaged trees that stand in proximity to paths. The remainder of this graph illustrates a trend that is typical of a woodland where there is a sizable number of middle-aged (13-18" DBH) trees and successively lower numbers in the 5 higher age class categories. This distribution can be explained by the eventual slowing and plateau of growth in mature trees and the natural senescence and ensuing decline of mature trees, particularly those above 31" DBH.



In terms of maintenance status of this inventory of The Grove tree population, the statistics displayed above are positive. Though it is understood that most of the tree population will never be "cyclically pruned", we still assigned this generic maintenance status to trees that did not require any immediate attention; the high number of trees in this category is indicative of an overall healthy population.

The 776 trees in the "let stand - wildlife habitat" category were primarily Condition 4 & 5 trees that were dead or in very poor condition but did not stand near trails or managed areas. Many of these trees are likely to eventually fall and decompose, adding nutrients to the woodland soil.

The 270 trees in the "monitor" category can be viewed as being in a transitional phase. Generally, these trees have developing structural issues or general decline and are standing in an area where there is a potential target if tree or tree part failure were to occur. It is recommended that these trees be evaluated periodically and pruned or removed as needed.

The 86 trees in the "priority prune" set are trees that are standing near trails or managed areas which are simply overgrown or have parts of which timely removal is recommended.

The 41 trees in the "remove" set should be prioritized and removed in a timely manner due to their proximity to trails or managed areas of The Grove.

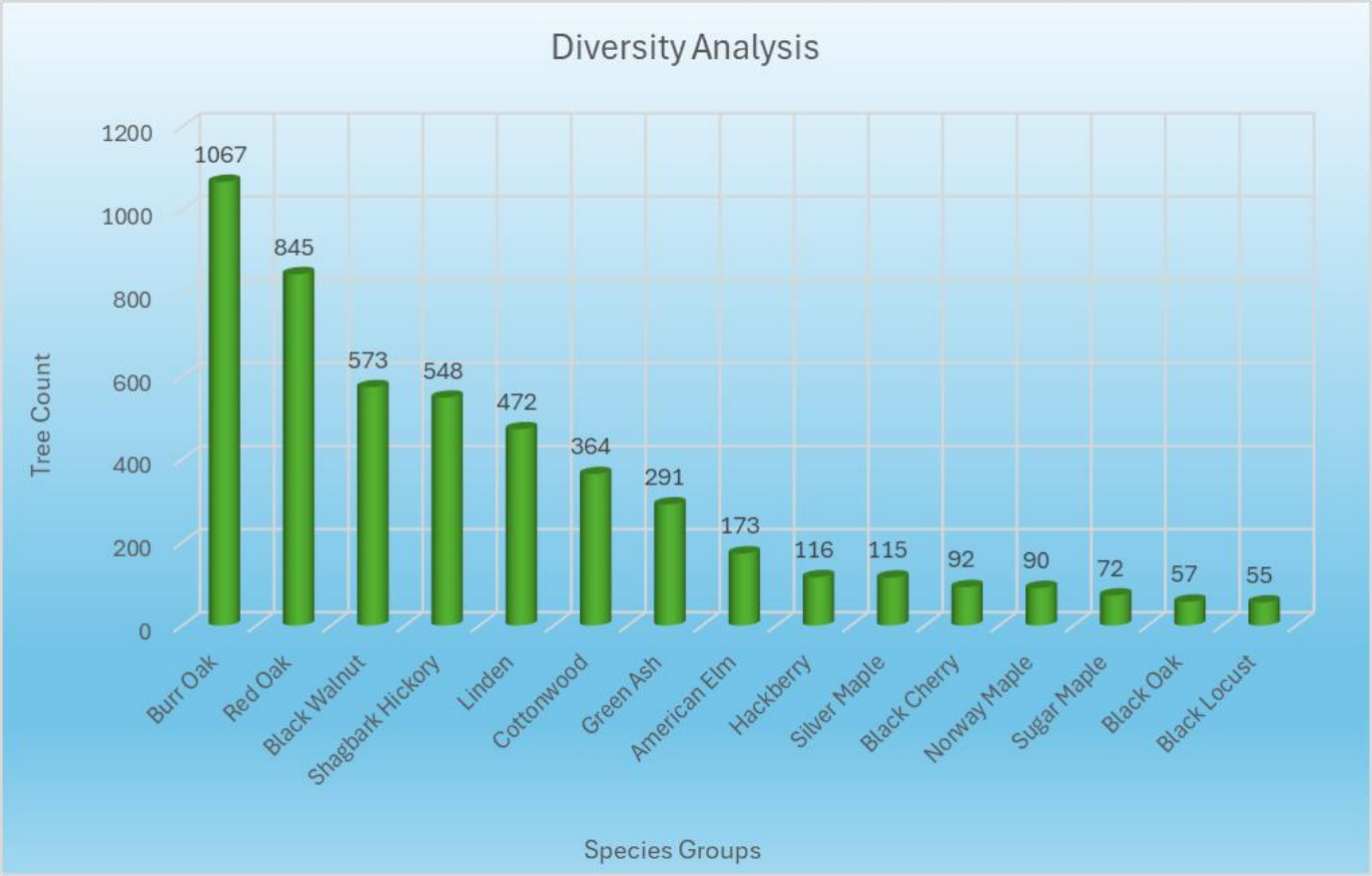
The "clear brush" category was not used liberally for this inventory since it would have applied to an abnormally high number of mature trees in the woodland. The Grove has a current and productive restoration effort implemented and it is understood that the task is arduous and time-consuming, though progress is being made.

The 28 trees in the "hazard prune" category should be pruned as soon as possible to mitigate a potential hazard risk. Likewise, the 14 trees in the "hazard remove" category should be promptly prioritized and removed. Some of these are classified as posing risk and near driveways, trails, or buildings.

The one tree which received a "risk assessment" status was a 22" DBH Red Oak which could pose a risk to people or property. This is a higher-quality species with ecological significance which could be worth the investment to salvage and preserve as opposed to removal. It is recommended that a Level 2 Basic Risk Assessment or Level 3 Advanced Risk Assessment be performed on this tree (per TRAQ or ANSI A300 Pt 9 Standards), or equivalent (ISA Tree Risk BMP methodology, Matheny and Clark, etc).

Diversity Analysis

The bar graph below illustrates the tree counts of species that represented more than 1% of the inventoried population.



The table below itemizes the tree population and average DBH and condition of each species.

SPECIES	COUNT	% OF TOTAL	AVG DBH	AVG COND
OAK-BURR	1067	20.36%	23.88	3.11
OAK-RED	845	16.12%	18.31	3.22
WALNUT-BLACK	573	10.93%	16.52	2.95
HICKORY-SHAGBARK	548	10.46%	17.76	2.62
LINDEN-SPP	396	7.56%	18.33	3.14
COTTONWOOD	364	6.95%	25.44	3.09
ASH-GREEN	291	5.55%	16.26	4.98
ELM-AMERICAN	173	3.30%	15.54	3.27
HACKBERRY	116	2.21%	17.21	3.00
MAPLE-SILVER	115	2.19%	21.25	3.39
CHERRY-BLACK	92	1.76%	12.99	3.68
MAPLE-NORWAY	90	1.72%	13.77	3.11
LINDEN-AMERICAN	76	1.45%	16.88	3.25
MAPLE-SUGAR	72	1.37%	16.15	3.35
OAK-BLACK	57	1.09%	19.49	3.18
BLACK LOCUST	55	1.05%	18.09	3.44
POPLAR-SPP	42	0.80%	21.31	3.81
OSAGE ORANGE	26	0.50%	17.92	3.85
WILLOW-SPP	22	0.42%	25.82	3.59
BOXELDER	21	0.40%	15.14	3.76
OAK-SWAMP WHITE	19	0.36%	8.79	2.84
AMERICAN REDBUD	16	0.31%	11.63	3.31
PINE-AUSTRIAN	15	0.29%	18.87	4.00
MULBERRY-SPP	14	0.27%	17.14	3.71
OAK-WHITE	12	0.23%	24.58	2.92
HONEYLOCUST	11	0.21%	25.82	3.00
POPLAR-WHITE	11	0.21%	25.09	3.18
KENTUCKY COFFEETREE	10	0.19%	18.60	3.50
PINE-SCOTCH	9	0.17%	13.89	3.44
HAWTHORN-SPP	8	0.15%	14.88	4.13
PEAR-CALLERY	8	0.15%	13.25	3.25
EASTERN REDCEDAR	6	0.11%	12.67	3.00
OAK-PIN	6	0.11%	16.17	3.00
IRONWOOD	5	0.10%	7.60	2.80
PEAR-EDIBLE	5	0.10%	7.20	3.40
APPLE-EDIBLE	4	0.08%	17.00	3.75
CATALPA	4	0.08%	17.75	3.25
SPRUCE-SPP	4	0.08%	16.75	2.75
APPLE-CRAB SPP	3	0.06%	8.00	3.67
WALNUT-WHITE	3	0.06%	14.33	4.00
BALDCYPRESS	2	0.04%	14.50	3.50
ELM-SIBERIAN	2	0.04%	22.50	4.50

HEMLOCK-EASTERN	2	0.04%	12.50	3.00
LILAC-SPP	2	0.04%	17.50	3.00
PAWPAW	2	0.04%	1.00	3.50
PINE-SPP	2	0.04%	15.00	4.00
PLUM-SPP	2	0.04%	7.00	3.50
UNKNOWN	2	0.04%	1.00	3.00
BIRCH-RIVER	1	0.02%	10.00	2.00
BUCKEYE-OHIO	1	0.02%	24.00	4.00
ELM-HYBRID	1	0.02%	2.00	3.00
GINKGO	1	0.02%	34.00	2.00
HICKORY-PECAN	1	0.02%	1.00	3.00
MAGNOLIA-TREE	1	0.02%	18.00	2.00
MAPLE-JAPANESE	1	0.02%	10.00	3.00
MAPLE-RED	1	0.02%	15.00	3.00
PERSIMMON	1	0.02%	1.00	3.00
PINE-WHITE	1	0.02%	17.00	3.00
SYCAMORE	1	0.02%	18.00	2.00

As the above graph and table illustrate, Burr Oak trees are by far the most numerous species present at The Grove and with an average condition rating of 3.11 and an average DBH of 23.88", these are primarily mature trees that are generally thriving in this woodland. Red Oak species are a close second with an average condition rating of 3.22 and average DBH of 18.31", these are primarily middle-aged to mature trees that are in overall slightly below average condition. Oak trees are an important part of native woodland ecosystems in our region, and they are known to stand majestically, living long lives in their native habitats. The Grove is fortunate to be home to a vast remnant of a spectacular native Oak woodland that can be preserved for future generations. Unfortunately, these native trees are also susceptible to fungal pathogens that can lead to dieback, decline, and death. Three prominent pathogens observed in Illinois include Burr Oak Blight which affects Burr Oak trees, Oak Wilt which most seriously affects the Red Oak group (including Northern Red Oak, Pin Oak, Black Oak, and other pointed leaf Oak species), and a Phytophthora fungal pathogen that has been identified as causing Oak decline. Most of the original inventory at The Grove was completed during leaf off-season, therefore observation of foliar symptoms of these pathogens was difficult. During the 2nd phase update a limited number of Oaks were observed to exhibit minor symptoms, however, a firm diagnosis of these fungal pathogens would have to be confirmed in a plant diagnostics laboratory. The 3rd phase update was also conducted during the dormant season. It is recommended that The Grove continue to closely monitor their Oak population and possibly consider a fungicidal treatment for high location value and healthy Oak trees that have tested negatively for the pathogens. Another issue faced by Oak trees in our region is Spongy Moth which has slowly been spreading westward from the northeastern part of the U.S. In years when Spongy Moth populations are high, the insects can quickly defoliate Oaks and various other tree species and successive years of defoliation can kill a tree. It is recommended that The Grove carefully monitor their Oaks for the presence of Spongy Moth and consider population control methods such as trapping, insecticide treatment, and manually removing egg masses from host trees.

Another observation regarding the Oak population at The Grove addresses the possibility of species hybridization among the Red Oak group, particularly the Northern Red Oak and Black Oak trees. Since much of the original inventory took place during the dormant season, Red Oak identification relied upon leaf and acorn litter along with bark characteristics. A fair degree of variability was observed among these three identification components causing positive identification to be more difficult. Twig or bud inspection is ideally the best method of identification; however, the growth habit of woodland trees severely limits the availability of twigs and buds to inspect. As the initial inventory progressed, species in the Red Oak group all received a label of Red Oak though the likelihood exists that these trees could be true Northern Red Oak (*Quercus rubra*), Eastern Black Oak (*Quercus veluntina*), or a hybrid of both. Hybridization in the White Oak group, particularly Burr Oak (*Quercus macrocarpa*) and Eastern White Oak

(*Quercus alba*) is much less likely since Burr Oaks dominate the woodland and Eastern White Oaks make up just 0.13% of the total population.

The third most numerous species at The Grove are Black Walnut trees which are a native woodland tree throughout much of the United States. Though not yet widespread in Illinois, Thousand Cankers Disease (TCD) is a pathogen affecting Black Walnuts which can lead to quick decline and mortality. Though quarantines are in place to slow the spread of TCD, it is important to consider the possibility of the introduction of this pathogen into Chicago area woodlands.

There are over 324 inventoried Green Ash trees at The Grove and virtually all of these are dead. With the widespread loss of many Ash trees and the potential loss of many Black Walnut trees on the horizon, it is recommended that The Grove consider taking some preemptive steps to plan for the future of their woodland tree population. Selective Oak, Black Walnut, and Green Ash removal along with subsequent reforestation with species less susceptible to pests or pathogens will help to ensure that a young and vigorous tree population is poised to mature and add to the diversity of a healthy woodland at The Grove. If preemptive Black Walnut or Oak removal is performed, it is recommended that The Grove communicate with the Illinois Wood Utilization Team to explore ways to repurpose these desirable wood species.

The fourth most numerous species at The Grove are Shagbark Hickory trees which are often found growing together with Oak species in native woodlands. The average DBH for Shagbark Hickory trees is 17.76" with an average condition rating of 2.62 indicating a middle-aged to mature population in very good overall condition.

The remaining species found in The Grove's woodland are what would be expected in our region and certain species are usually found growing in similar soil types. For example, Oak and Hickory species are generally found growing in the more upland, drier soils of The Grove while species such as Cottonwood, Elm, Silver Maple, Black Cherry, White Poplar, Green Ash, and Willow are found growing in lower lying or floodwater prone areas of the woodland. Fortunately, The Grove has not become overgrown with undesirable species such as Boxelder and Mulberry; this is a positive trait for the woodland's future.

Since the data for this inventory does not reflect the current condition of the woodland understory, it is important to take some time to discuss our observations during this project. A serious issue that will affect the future of The Grove's woodland is the lack of widespread Oak regeneration throughout the site. A major contributing factor for this lack of regeneration is likely to be the large population of deer and squirrels which both rely on acorns as a staple of their diet. Acorns which can avoid being eaten by wildlife and successfully germinate into seedlings are likely to also be over-browsed by hungry deer. Also, the dense canopy of The Grove's woodland has led to competition for sunlight which also negatively affects regeneration since Oaks are generally not tolerant of excessive shade. Selective removal of poor condition trees to open up the canopy in addition to the implementation of prescribed burns have been noted as successful practices to promote Oak regeneration. Also, manual planting of acorns or transplanting of Oak saplings are other options that can increase the chances of a thriving young Oak population. It is recommended that The Grove create a long-term plan to encourage the successful regeneration of Oak species to ensure the future health and viability of the woodland.

In stark contrast to the lack of Oak regeneration, a significant amount of Ash seedlings could be found in areas throughout The Grove. Though virtually all older Ash trees have died due to EAB infestation, this young generation of Ash trees at The Grove is threatening to overtake a significant portion of the understory. It is recommended that The Grove consider active treatment of this excessive Ash regeneration through cutting and/or herbicide. The Grove might opt to leave some Ash saplings, particularly those which have established in the lower-lying soils preferred by Ash species, which could allow for the survival of an Ash population in the post-EAB future.

Other Observations

Some other observations made while conducting the inventory at The Grove are discussed below. Please note that only 75% of The Grove's inventory has been updated during the past three years, so some of the narrative in this report was included in the original 2016 report and has been left in this update report for reference. Once the comprehensive update is complete, a revised report will be created.

The understory in parts of The Grove has become overgrown with invasive plants, particularly Buckthorn, Oriental Bittersweet, and Multiflora Rose. These invasive species can overtake the woodland, crowding out native plant and tree species and increasing the competition for water and nutrients. The presence of Poison Ivy is widespread throughout The Grove as well. Using in-house staff and a network of volunteers, The Grove has implemented an ecological restoration program to control these invasive and fast spreading plants. As invasive species are continually removed, The Grove could opt to revitalize the understory with native plants, either by overseeding or transplanting. A healthy understory is an important part of an overall healthy woodland.

Since The Grove is a busy, well-used facility, it is recommended that all trees along the trail system, near buildings, and in other higher traffic areas receive a periodic assessment for any developing or worsening hazard risks.

Overhead power lines are present along several parts of The Grove's perimeter, including along Kennicott Lane, along Milwaukee Avenue, and along the railroad tracks and subdivision on the far east side. Though many of the trees growing near these power lines have been pruned by utility contractors, it is recommended that these perimeters be periodically evaluated for any developing issues.

Conclusion

The Grove National Historic Landmark is a remarkable facility which is home to an exceptional remnant of native Oak woodland, and it is surely a jewel of Glenview Park District and a treasure to all its patrons. This native woodland is a precious ecosystem and Glenview Park District should be commended for its commitment to continue to preserve this ecological asset. It is recommended that GPD take measures to ensure the successful regeneration of young Oak trees and to also remain committed to restoration projects to mitigate the proliferation of invasive species in the understory. Great Lakes Urban Forestry has been pleased to provide our inventory, consulting, and GIS mapping services at The Grove and we look forward to continuing to partner with Glenview Park District in the planning or completion of future forestry, natural resource, restoration, or GIS mapping projects.