Village of Dolton Public Tree Inventory - 2017

Lab For Urban Forestry in the Anthropocene (LUFA) :
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Background

Trees provide many environemental and social benefits to cities, including shade, stormwater management, improvement of air-quality, carbon dioxide sequestration, increased property values, public health improvments such as lowered BMI and asthma rate in children, as well as community involvment.

Public street tree inventories are crucial for the proper management of municipal forests, not only ensuring the health and diversity of a tree population but also maintaining the positive view of street trees within a neighborhood.

Image 1. Silver maple street tree in Dolton, IL; most common species inventoried

Methods

In the summer of 2017, DePaul University students Kaitlyn Pike and Alli Preble surveyed a sample of Dolton public trees. The village was split into zones A, B, C, D, E, F and G, as well as randomly selected segments within each zone, ending in 281 segments in total. Each tree within a segment was identified according to species, genus, DBH, condition and then photographs of the leaves, bark and entire tree were taken. This data was collected on Apple iPad tablets, running Survey123 software and then analyzed in Microsoft Excel and ArcGIS.

Variable	Explanation
Taxonomy	Trees identified by genus and species, both common and Latin names
Tree Location	Zone (A - G), segment (1-281) and full address where tree is located
DBH	Diameter at breast height (4.5 ft above ground level, measured in 2" classes); heights recorded if diameter taken at different height
Mortality Status	Status was categorized as alive, standing dead or a stump

Table 1. Explanation of collected variables for 2017 Village of Dolton public tree inventory.

Citations
The Benefits of Trees. (n.d.). Retrieved August 22, 2017, from http://canopy.org/tree-info/benefits-of-trees/

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2017 Sample Inventory Areas

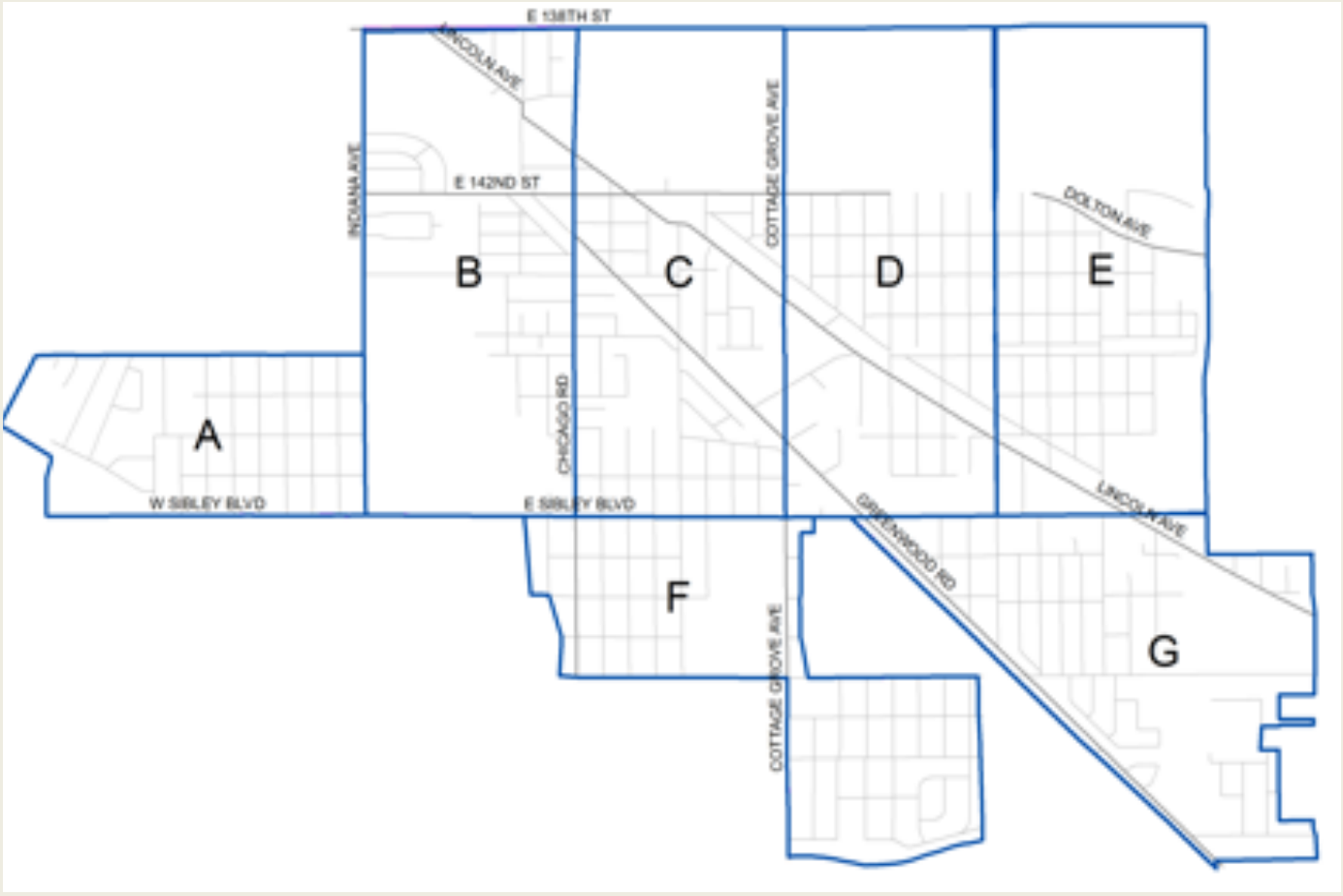

Figure 1. Map of designated zones for Dolton, IL Public Tree Inventory (Credit Adam Berland?)

Inventory Results

Sample Street Tree Inventory Results

We inventoried 2,144 trees in total. The sample tree population is characterized by a high number of silver maples (Table 1B) with 73.47% of the mass falling under the maple genus.

Of the 281 segments inventoried, 50 had no trees present. Zone B had the highest number of segments with no trees at almost 40% of the zone, while all of Zone F's segments inventoried had trees present (Table 2).

All alive trees were identified, but many unknown trees were stumps, therefore a confident i.d. was unobtainable. The vast majority of dead trees were lost due to pests, namely emerald ash borer (Image 1).

The majority of street trees were of mature size with an average DBH of 22.65 inches. The top 10 most common street tree species had an average DBH between 10 and 28 inches (Figure 2).

Species	# of Trees	% of Total Inventory
Silver Maple	1122	52.33%
Royal Red Maple	114	5.32%
American Elm	108	5.04%
Norway Maple	101	4.71%
Honeylocust	100	4.66%
Freeman Maple	68	3.17%
Green Ash	51	2.38%
American Sycamore	44	2.05%
Red Maple	43	2.01%
Apple	35	1.63%

Table 1. Top 10 species of the 281 designated segments in the 2017 Public Tree Inventory. These numbers represent living trees.

Zone	# of Segments	# of Trees	% No Trees	% Alive
A	24	294	8.33%	96.60%
B	43	193	39.53%	94.30%
C	48	289	22.9%	96.19%
D	39	277	15.38%	92.06%
E	39	313	2.56%	92.97%
F	50	571	0.00%	93.87%
G	38	204	34.21%	90.34%

Table 2. Distribution of living surveyed trees by zone.

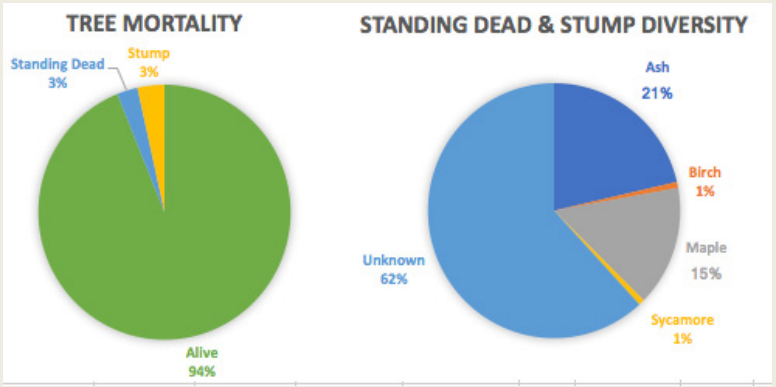

Figure 3. Percentage of trees inventoried by mortality
Figure 4. Distribution of non-living trees by genus.

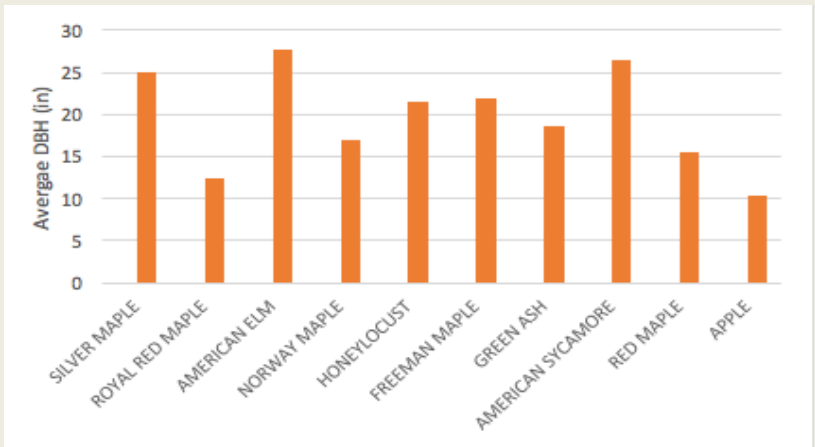

Figure 2. Average DBH in inches for top 10 most common species

Image 1. Ash tree with distinct markings from emerald ash borer

Recommendations for the Village as a Whole

Maintenance

Every ash tree surveyed was in bad shape due to the emerald ash borer. A large portion of these are dead and need to be removed. A different species should be planted, as to avoid a future emerald ash borer outbreak. Additionally, there are many trees which need their branches trimmed, both live and dead. Overhanging branches are hazardous, as they can land on cars, houses and people. Not only is this a liability for the Village of Dolton, but it also negatively affects the public's opinion of the trees in their neighborhood. Many of Dolton's residents had complaints of these falling branches, as well as excessive leaf litter, and requested that otherwise healthy trees be removed completely.

At least one segment inventoried contained young trees which had died. While we can not determine the cause, it is important to ensure watering is maintained according to the species planted. Otherwise, it is a lost investment for the Village. For future plantings, an outreach effort by the Village to convey the importance of watering young street trees could ensure their survival.

Diversity

Maples outnumber other genus' by a very large margin. The silver maple species alone represents 52.33% of Dolton's public tree population, with most of the population being around the same age. This monoculture system is more susceptible to disease and could possibly lead to a die-off of the majority of Dolton's canopy cover. Therefore it is important to not only begin and maintain new tree plantings, but to also focus on a variety of species in order to promote greater diversity. Focusing on native trees, such as oaks, will increase the biodiversity of local animal populations. In the interim, insect & disease monitoring is critical due to the single-species dominance of the street trees.

Size Distribution

Approximately 28% of possible street tree planting sites remain available in the neighborhood and downtown areas surveyed (planting spaces were not counted for trail and park inventories). Most of these planting spaces are large and suitable for planting trees that grow to a mature size of greater than 45' tall. Planting trees in available spaces can begin to remedy any current problems with unsustainable species and size distributions in the areas inventoried as indicated in specific recommendations above. (Note that the 2012 summer inventory planting space assessment did not consider the location of underground sewer or electrical utilities and, as always, this information should influence street tree planting decisions.)

Maintenance

Recommended maintenance tasks on inventoried trees are relatively minimal, with only 7% of inventoried trees recommended for removal at some point in the future and most other trees requiring only routine or no maintenance. However, as the neighborhood summaries indicate, removal needs (based on current condition of trees) vary widely from neighborhood to neighborhood, with 42% of the trees (primarily old silver maples) in Sunny Slopes recommended for removal but only 1 tree of 84 recommended for removal in St. James Woods.

Although not an explicit maintenance task included in the inventory, watering street trees is an important tree maintenance task to help recently planted trees become established in the landscape and to protect the investment represented by all street trees. Areas inventoried with high proportions of small trees include Miller-Showers Park, the B-Line Trail, St. James Woods and The Highlands. For park and trail trees, the City should budget and formally plan for routine watering of all recently planted trees, particularly during dry summer periods. For neighborhood trees, an outreach effort by the City to convey the importance of watering street trees could encourage adjacent homeowners (perhaps through neighborhood associations) to water street trees to help ensure they survive to provide benefits into the future.

How to access an electronic version of this report:

The project page for Village of Dolton Tree Inventories, where this report can be downloaded as a PDF, will be the LUFA website: http://www.lufa-depaul.org/googlestreetview.html.

Questions?
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