

City of Lake Forest Park i-Tree Assessment

Presentation
February 2024



DCG WATERSHED

Overview

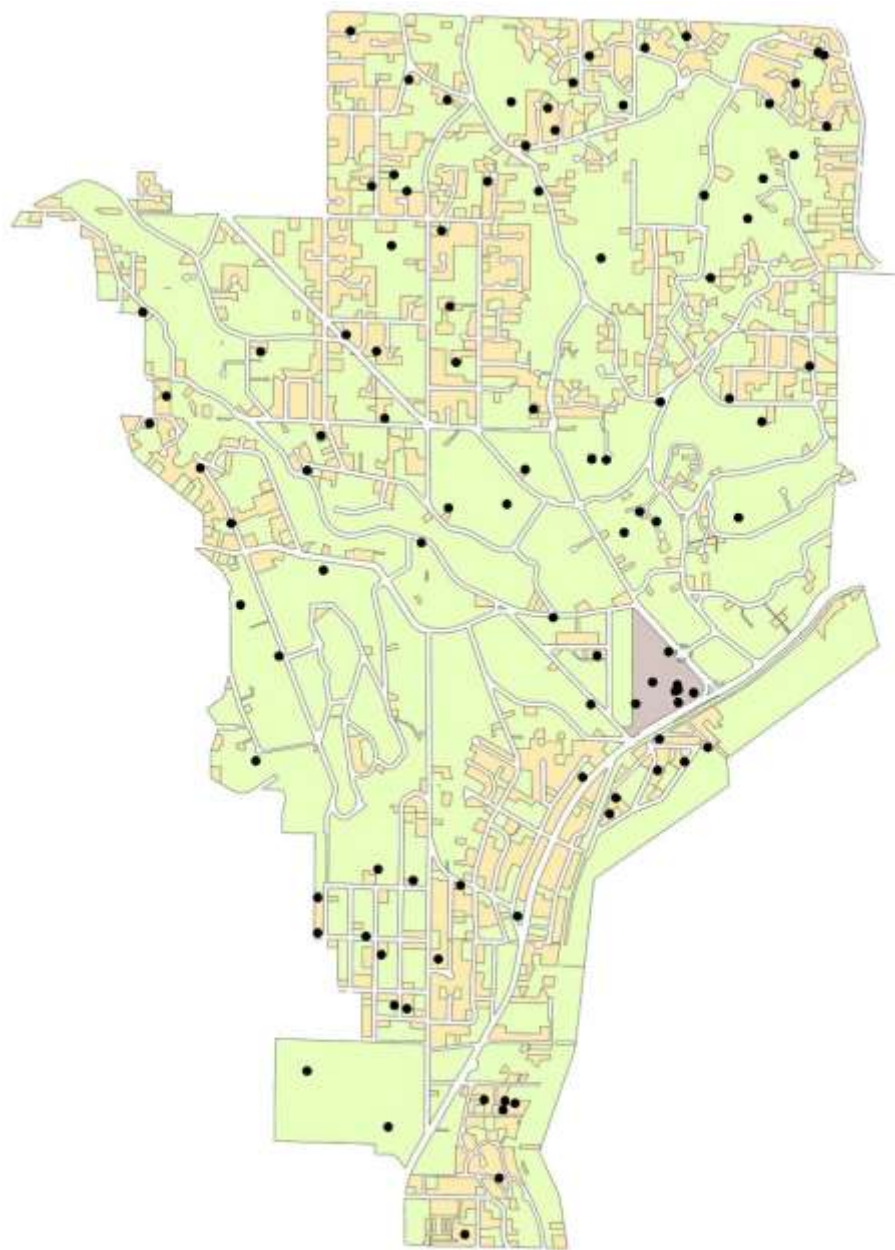
- Project Objectives
- Methods
- Data Analysis & Results
 - Urban Forest Structure
 - Ecosystem Service Benefits
- Discussion






Project Objectives

- City-wide tree inventory using GIS and a randomized plot sampling methodology.
- Describe urban forest attributes and structure.
- Characterize ecosystem service benefits.
- Engage and educate landowners participating in the study regarding urban forest management efforts.
- Compare results to the 2010 city-wide tree inventory to assess change over time in Lake Forest Park's urban forest.

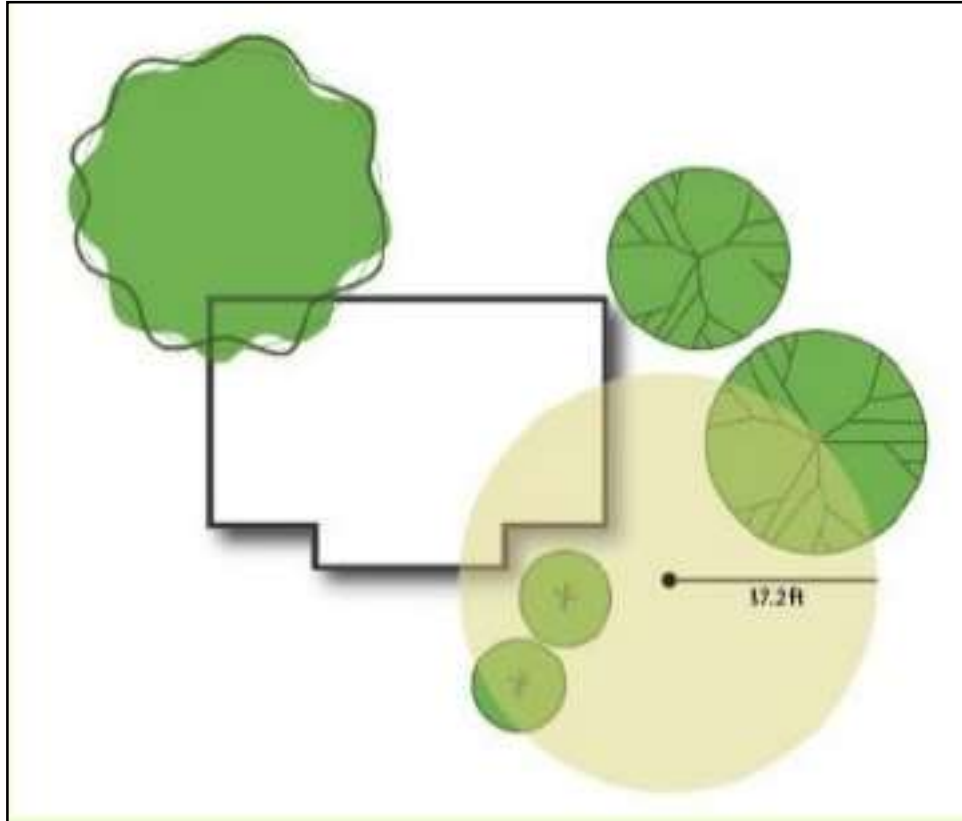


Methods – i-Tree Eco

- i-Tree Eco Stratified Sampling Protocol
- Field Data Collection:
Fixed Radius Plot Inventory – 100 plots

	Stratum	Acres	Number of Plots
	Town Center	19	8
	≤¼ Acres	532	52
	>¼ Acres	1750	40

Methods: Field Data Collection



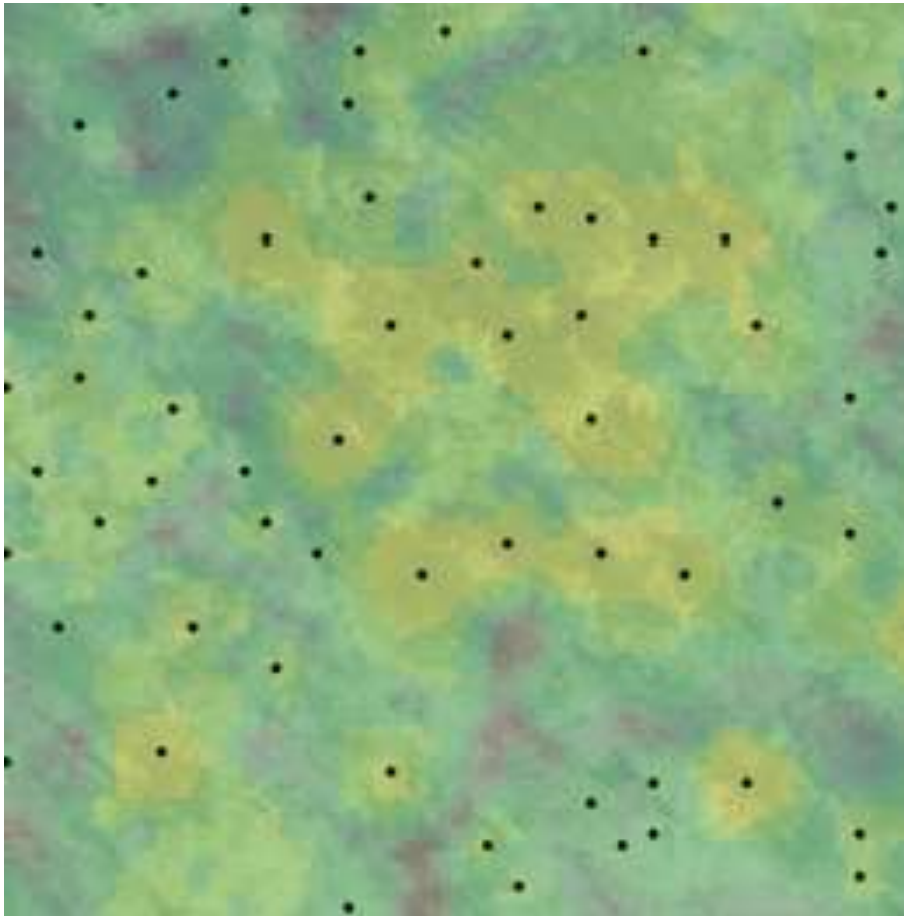
➤ Plot Size and Location

➤ Plot Metrics

- Location
- Canopy cover
- Shrub cover
- Land use
- Ground cover

➤ Tree Metrics

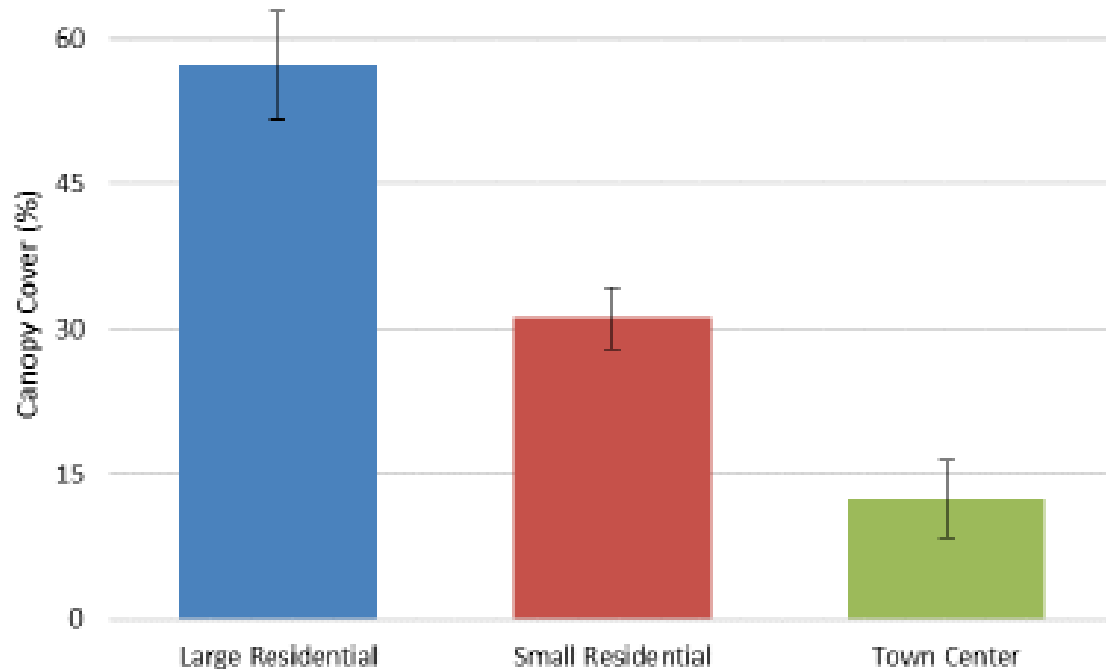
- Tree Diameter and height
- Species
- Crown condition
- Height
- Crown size



Methods: Canopy Height Model

- Identify trees with LiDAR data
- Evaluate tree heights
- Compare data between 2016 and 2021 flights

Results: Canopy Cover

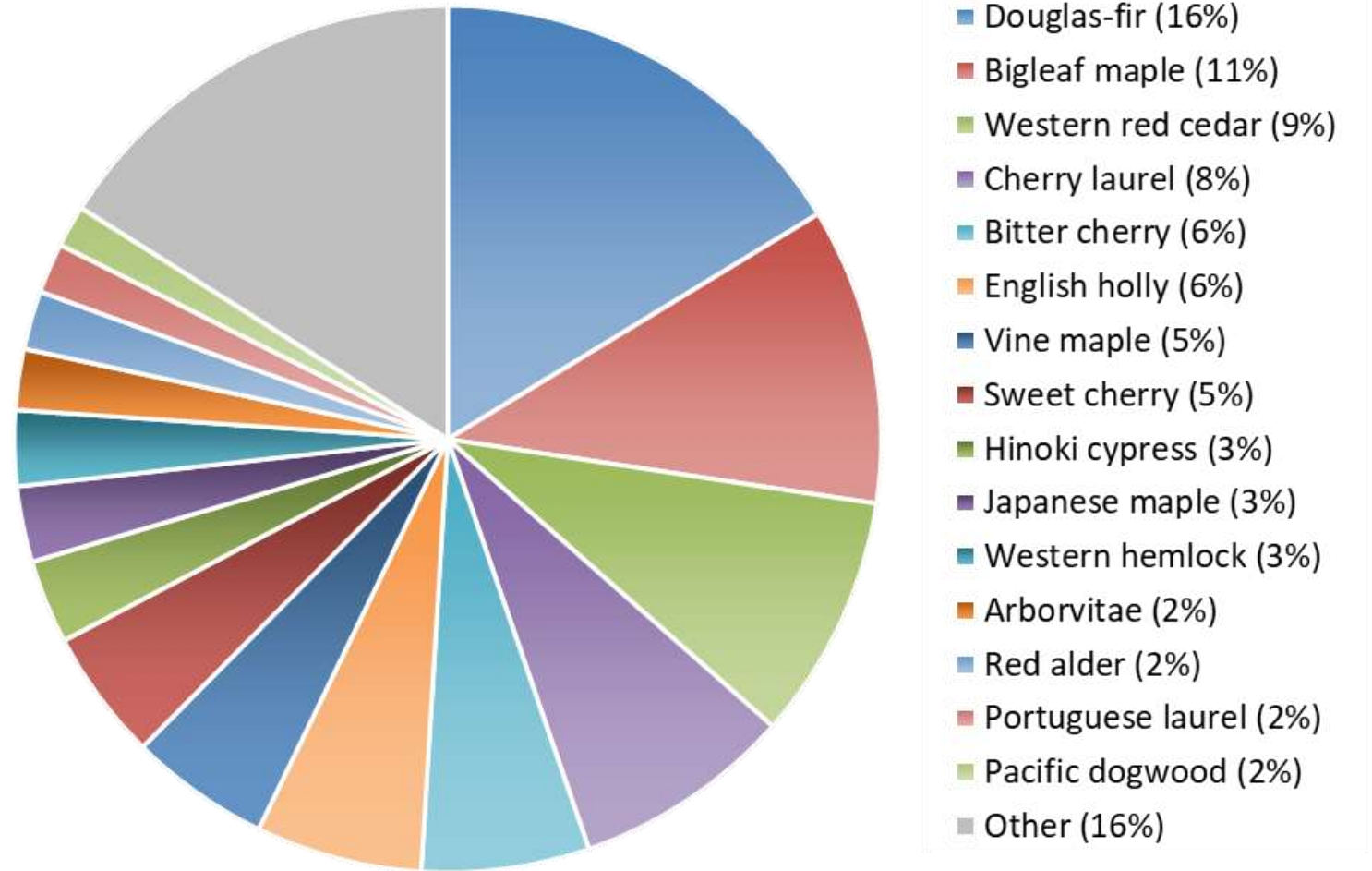


Canopy cover by stratum

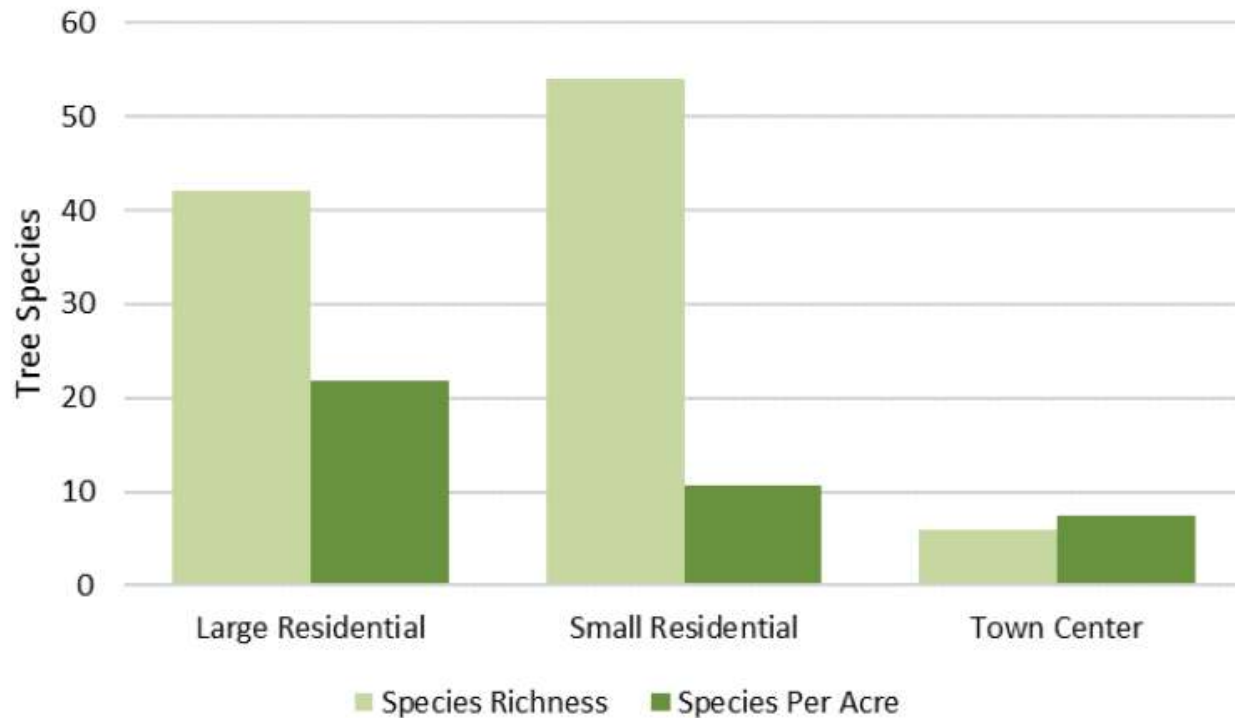
- 297,056 (\pm 39,070 trees)
- Canopy cover 50.6%
 - 57% in Large Residential
 - 31% in Small Residential
 - 13% in LFP Town Center
- Similar trends across forest metrics.

Results: Species Composition

- 63% Native
- 19% Weeds of concern or invasive



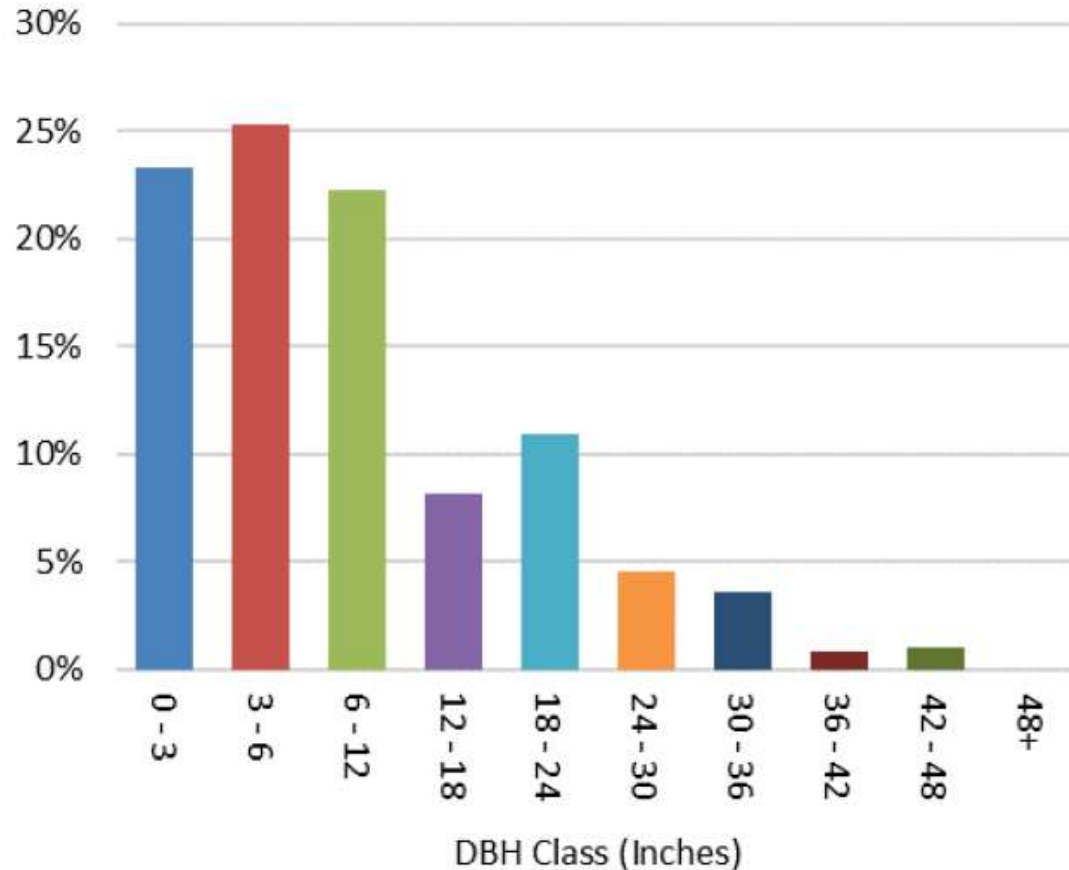
Results: Tree Species Diversity



Species richness and species per acres by strata

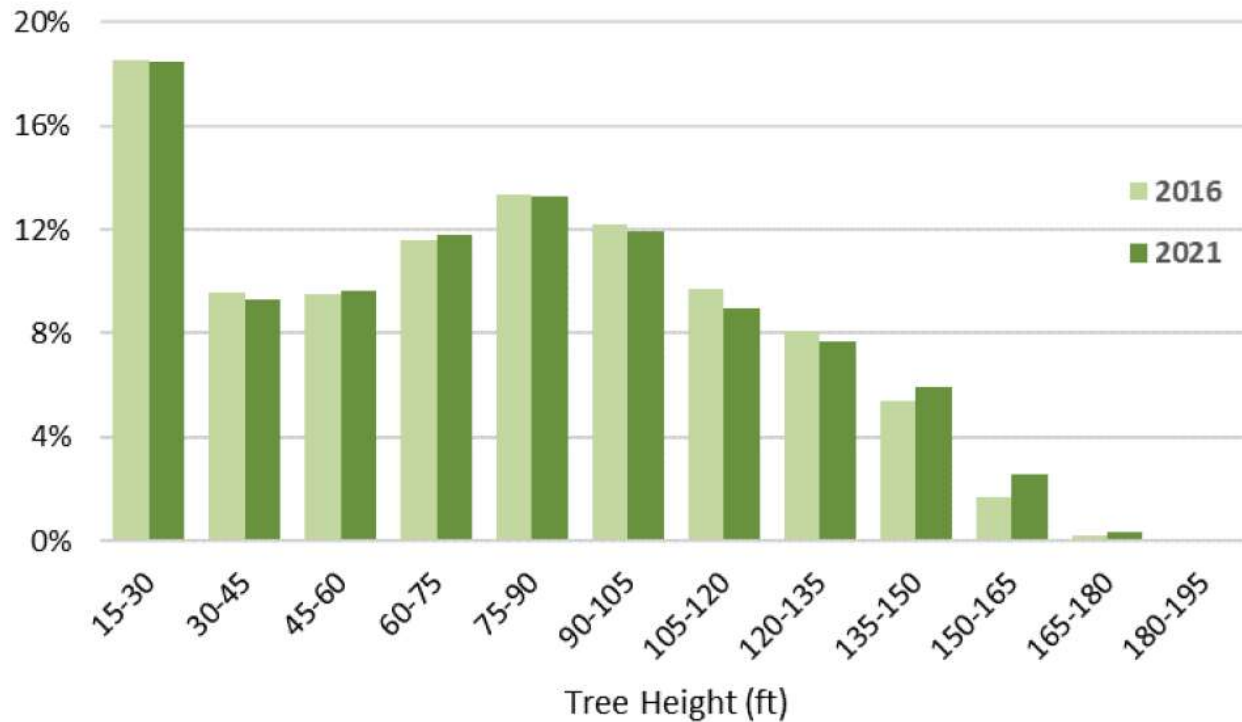
- Species richness results differ depending on the study.
- Small residential has greatest SR at city-scale.
- Large residential has greatest SR at plot-scale .

Results: Tree Species Size



- Youthful tree population.
- 71% less than 12" DBH.
- 10% of trees larger than 24" DBH.
- Proportion of larger trees is increasing.

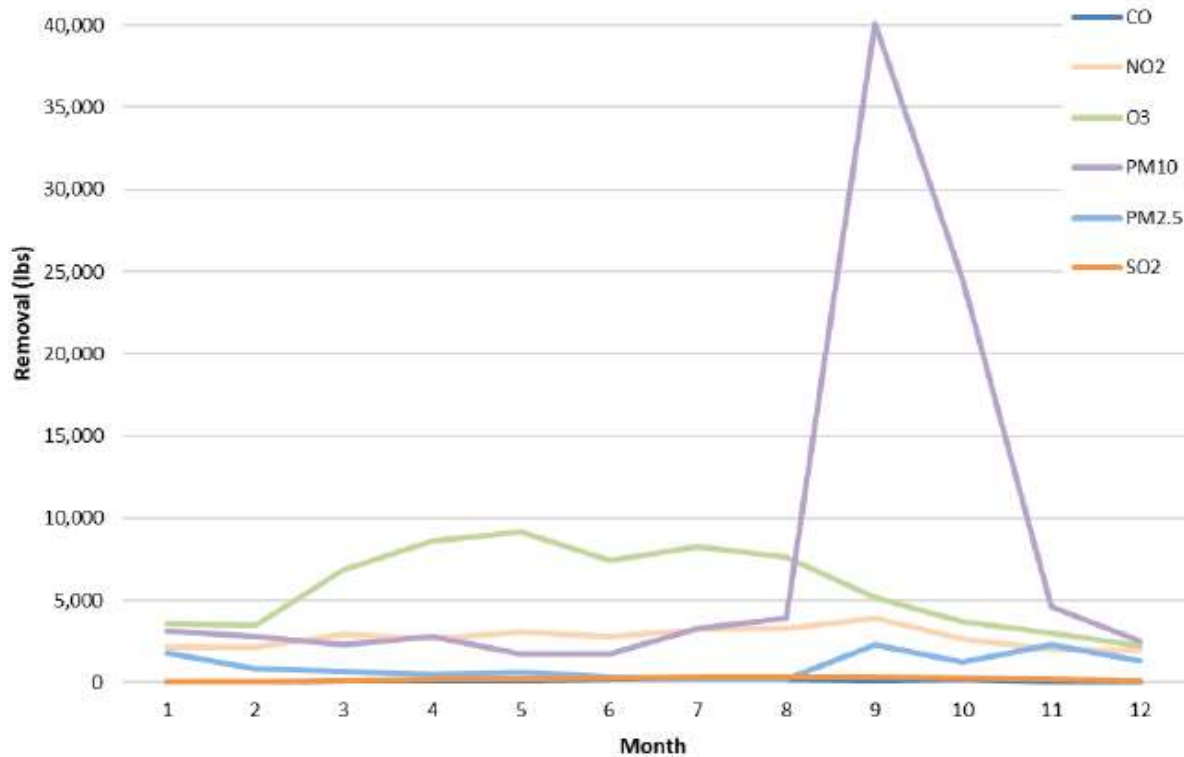
Results: Canopy Height Model



Histogram of tree heights in 2016 and 2021.

- Increasing proportion of large trees
- Other age classes generally steady over time

Results: Ecosystem Service Benefits

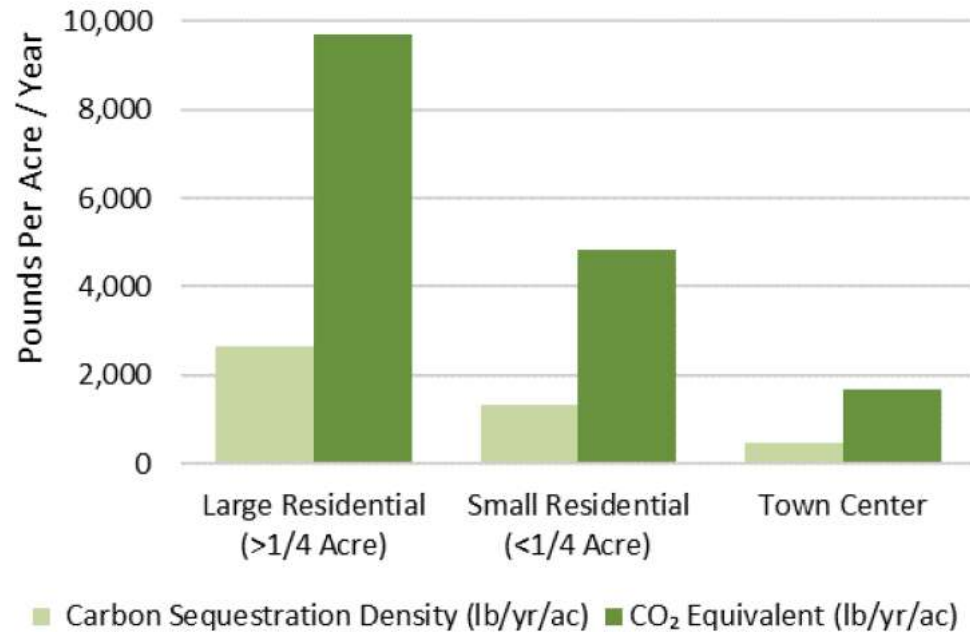


Estimated monthly pollution removal by the Lake Forest Park urban forest

Air Quality

- Trees improve air quality by absorbing or intercepting gaseous pollutants.
- Air quality tree benefit valued at \$2.55 million annually.

Results: Ecosystem Service Benefits

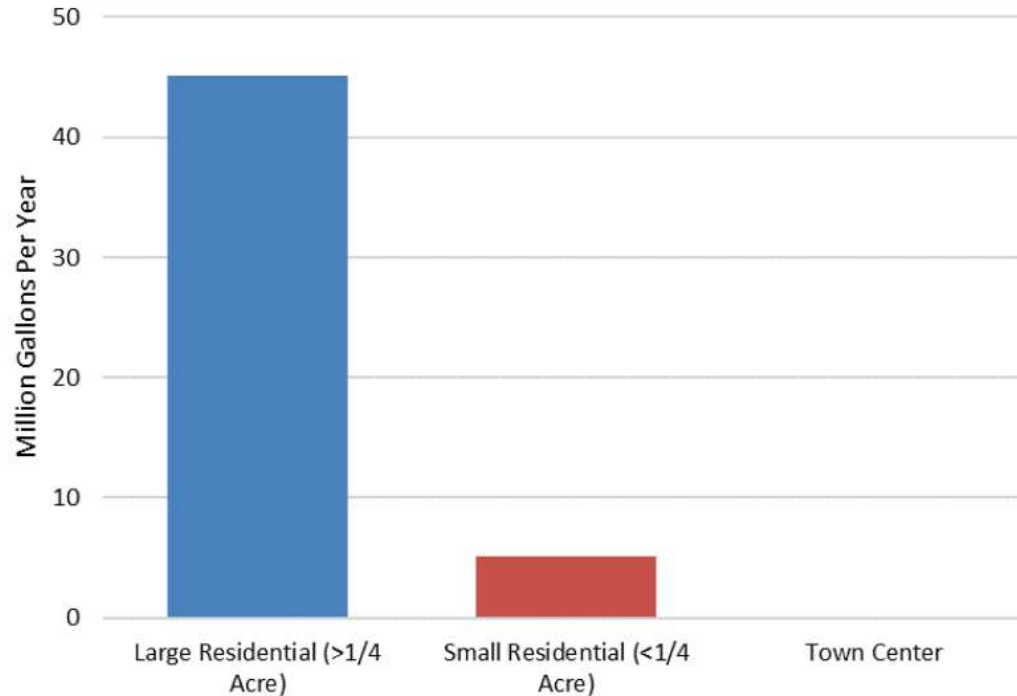


Carbon sequestration each year by stratum.

Carbon Storage

- \$450,000 per year in carbon storage
- \$16.6 million per year total stored in trees today.

Results: Ecosystem Service Benefits



Avoided runoff per annum, by stratum.

Stormwater

- \$450,000 per year in avoided runoff
- Reduced need for built stormwater infrastructure

Results: Ecosystem Service Benefits

Total Lake Forest Park tree benefits summary.

Benefits	Annual Value	Annual Value Per Tree
Energy & Carbon Emission Reduction	\$646,683	\$2.17
Gross Carbon Sequestration	\$450,102	\$1.53
Pollution Removal	\$2,545,703	\$8.57
Avoided Runoff	\$450,254	\$1.52
Total Benefits	\$4,092,742	\$13.79



Results: Pests and Pathogens



Emerald ash borer

- i-Tree provides susceptibility matrix of each tree species to each pathogen and quantifies economic costs.
- Some pests and pathogens *may* benefit from management.
- Emerging threats such as EAB.



Discussion

- Climate Adaptation and Resilience
- Protection of Significant and Large Trees
- Invasive Species Management
- Additional Considerations

Questions

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