2018 Street Tree Inventory

UFM Graduate and Honors Undergraduate Student Case Study
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Case Study Introduction

The IU Health Bloomington Hospital is being relocated from the 400-800 Block of West 1st and West 2nd Street to a site near the IN-45/46 Bypass. The deconstruction of the current hospital will effect the nearby McDoel and Prospect Heights neighborhoods. For this case study, an inventory of the street trees within a four-block radius of the IU Health Hospital was completed to assess the current state of the urban forest and how it has changed since the last inventory in 2007.

For the 2018 assessment we focused on the surrounding neighborhoods of parcel A. This reduced the size of the 2007 inventory area, split up into teams of 3-4 graduate and honors students, and then subdivided the deconstruction zone and surrounding areas by street to facilitate the inventory. Every street tree in the highlighted areas was inventoried.

The 2018 inventory included

- Tree species
- Location
- DBH
- Tree condition
- Width of tree lawn,
- Maintenance needs
- Nearby presence of power lines
- Whether the tree had been planted since the 2007 inventory
- Potential planting sites
- Any additional relevant information
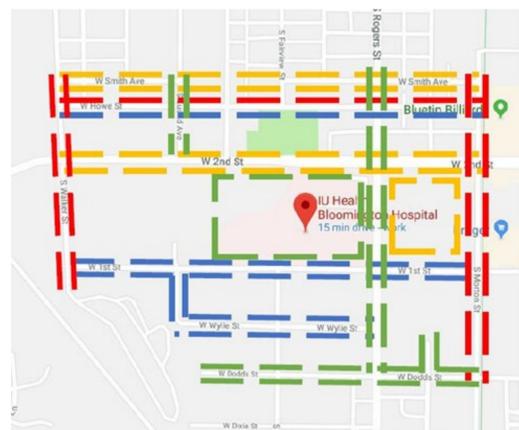
Division of inventory area by group

Urban Tree Canopy benefits for the new inventory were calculated using the iTree Canopy v6.1 online tool.

Results

Overview
- 197 trees surveyed in total
- 146 of the trees are one of the top ten species
- Most abundant species is red maple
- All maple species make up 41% of the total inventory
- 100 potential planting sites were identified

Tree Benefits
- Removal of greenhouse gases from atmosphere (e.g. carbon dioxide)
- Decrease in speed of traffic
- Increase mental health for residents
- Aid in flood prevention and stormwater retention
- Decrease in temperatures
- Increase in shade coverage- decrease in utility bills
- Increase property values
- Improves overall air and water quality
- Increase wildlife biodiversity
- Aesthetic benefit

Canopy Cover Assessment

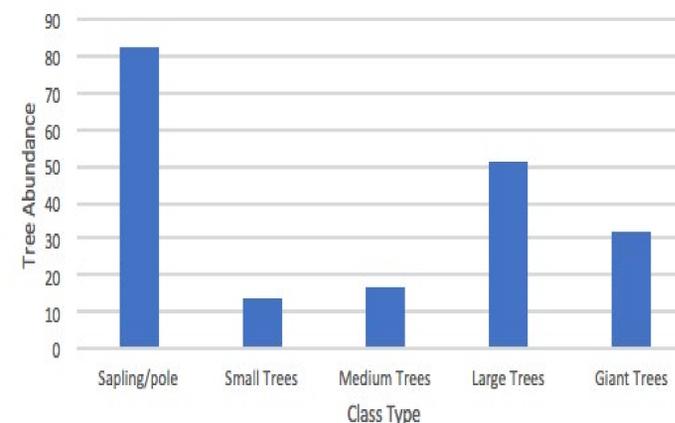| Cover Class	Description	Points	% Cover
Tree	Tree, non-shrub	263	26.3
Non-Tree	Impervious surfaces	586	58.7
Green Space	Grass or potential planting areas	150	15.0

Points generated using iTree Canopy online tool, which uses Google Maps aerial photography to generates sample points which are classified as a data point.

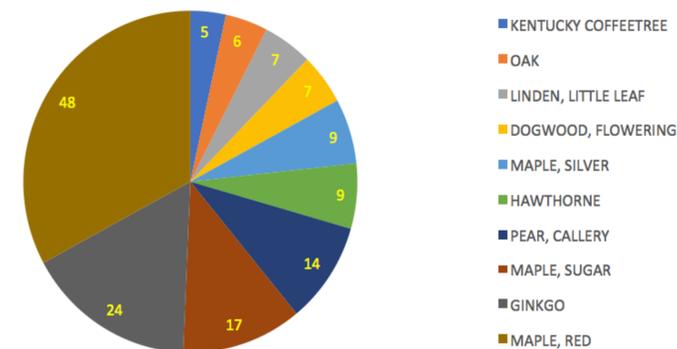| DBH Class Distribution 2018		
Class Name	Class Size	Count
Regeneration	< 3 inches	20
Sapling/pole	0 - 9 inches	82
Small Trees	10 - 14 inches	14
Medium Trees	15 - 19 inches	17
Large Trees	20 - 29 inches	51
Giant Trees	> 29 inches	32

The majority of trees have a DBH class size below 10 in. Tree benefits will not be maximized until the majority of trees have a DBH in the Medium or Large class size.
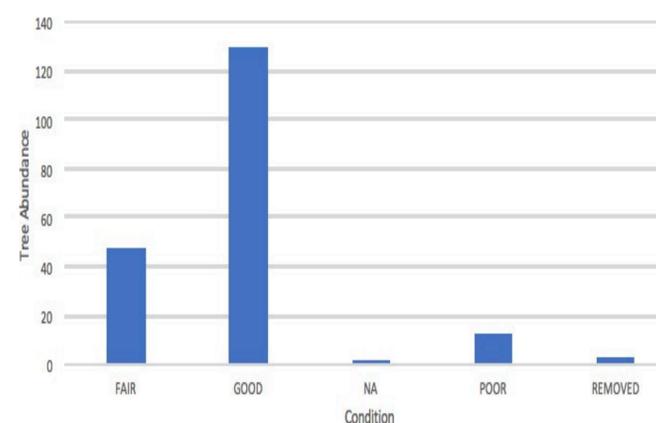
Class Distribution- Total Inventory

Abundance of Top 10 Species

- KENTUCKY COFFEETREE
- OAK
- LINDEN, LITTLE LEAF
- DOGWOOD, FLOWERING
- MAPLE, SILVER
- HAWTHORNE
- PEAR, CALLERY
- MAPLE, SUGAR
- GINKGO
- MAPLE, RED

Tree Condition- Total Inventory

Conclusions

Potential Errors
- Trees located on a boundary between group survey areas potentially counted twice or omitted
- Issues in differentiating between private and public trees
- Species identification
- Omitting sites from 2007 inventory
- Subjectivity of condition classification between groups
- Trees planted on intersections since 2007 inventory potentially double counted

Recommendations
- Fill potential planting sites with trees
- Increase species diversity by planting more trees from less common species
- Remove or prune trees in "poor" condition
- Prune/maintain trees in "fair" condition
- Preserve hospital trees during construction
- For every tree removed during construction, plant another to maintain urban forest canopy benefits

References

- City of Bloomington, Indiana (2014) Bloomington Urban Forestry Plan (2014 - 2019) bloomington.in.gov/about/trees/urban-forestry-plan.

- Portland State University (2010). "Protocol: Measuring Tree Diameter, Class Size, and Average Species Diameter." Ecoplexity, ecoplexity.org/?q=node%2F236.