

# Matlock Heights Tree Inventory

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## Introduction:

A properly cared for tree is a valuable and growing asset worth three times its investment (Pam Louks, 2012). Benefits include decreasing energy consumption, CO<sub>2</sub> sequestration, improved air quality, stormwater interception, and aesthetic values. Additionally, trees help facilitate a stronger sense of community (Dwyer et al., 1992).

Since its development, Matlock Heights has greatly increased canopy cover throughout the neighborhood.



Figure 1: Past and present photos of households in Matlock Heights

## Methods:

A framework by Clark *et al.* was used as a model for sampling Matlock Heights tree resources and community involvement (Clark *et al.*, 1997). Permission was obtained from the homeowner before the survey was conducted. 35 homeowners in Matlock Heights agreed to participate. The homeowners who provided an email received an online survey via survey monkey to gather information on residents' attitudes towards trees and tree canopy cover. The survey contained 10 questions such as:

- Would you prefer more, the same amount, or fewer trees in your neighborhood?
  - How important are the aesthetic benefits that the trees provide you?
- 180 trees were sampled and the following attributes were measured:
- Species
  - Diameter at breast height
  - Condition
  - Conflicts (i.e., powerlines and sidewalk)
  - Maintenance requirements

All data was analyzed using i-Tree software suite. Maps were created using ESRI ArcGIS software

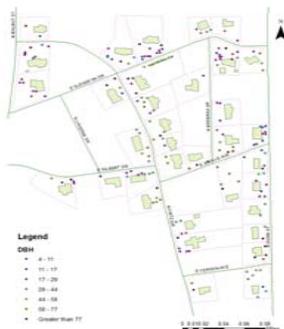


Figure 2: GIS map of DBH classes in Matlock Heights.

## Results:

### Survey:

There was a 90% response rate with 27 responses out of the 30 distributed surveys. Respondents ranked aesthetic values as most important followed by public benefits (i.e., improving air quality). A majority of respondents wanted to increase the number of trees in the neighborhood but did not plan on planting more trees within their own yards. Within the past five years, the majority of trees planted were ornamental.

### Inventory:

Maples (Red, Sugar, Silver, and others) comprised 34% of the sampled trees. Other dominant species included Eastern White Pine, Red Bud and Dogwood at 24% percent (Figure 2).

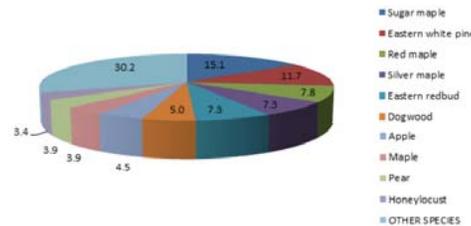


Figure 3: Pie chart of the most dominant species from the tree inventory

Tree diameters were grouped into four classes and the distribution of these sizes can be seen in Figure 4 compared with Richards (1983) ideal distribution.

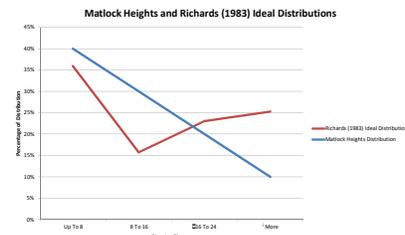


Figure 4: Figure showing the diameter measurements from Matlock Heights Inventory (blue line). These measurements are compared to the idealized distribution of Richards et al. (1983) (red line).

Tree condition was classified as good, fair, poor, or dead/dying with the following proportions:

- Good – 51%
- Fair – 33%
- Poor – 13%
- Dead/Dying – 3%

### i-Tree:

The monetary benefits calculated in i-Tree for Matlock Heights are shown in Table 1. The most benefits come from stormwater abatement and aesthetic improvements.

Benefits	Total (\$)	\$/tree
Energy	1,096	6.12
CO <sub>2</sub>	140	0.78
Air Quality	410	2.29
Stormwater	4,245	23.72
Aesthetic/Other	3,768	21.05
<b>Total Benefits</b>	<b>9,659</b>	<b>53.96</b>

Table 1: Calculated benefits from i-Tree in monetary form.

## Discussion:

Increasing diversity through planting a variety of tree species within the neighborhood is essential in protecting against potential widespread losses. Residents may want to consider planting larger growing species such as Pin Oak, Horsechestnut, or Black Walnut which are currently low in abundance and will provide higher levels of benefits. There is a high number of small and large diameter trees in Matlock Heights and a lower number of medium sized trees. Ideally, the distribution would favor smaller trees that will come to replace the larger ones.

## Conclusion:

In order to create and maintain a sustainable urban forest it is vital that the resource is properly managed. Proper management actions taken by residents can create a return on investment three times the worth of the initial (Pam Louks, 2012). In order to ensure the continuation of benefits into the future it is important that residents both maintain the current tree canopy and plant a diverse group of new trees, ensuring the long term health of the neighborhood's tree canopy.

## Works Cited:

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Dwyer, J.F., E.G. McPherson, H.W. Schroeder, and R.A. Rowntree. (1992). *Assessing the Benefits and Costs of the Urban Forest*. Journal of Arboriculture. 18(5): 227-234.

Louks, Pam. (2012). *Urban Forestry Indiana, Gettin' it Done! How the CUF Program Helps Keep the Urban Forest Growing*. Indiana University. PowerPoint Presentation.

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