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City of Beech Grove  
2009 Tree Inventory  
Summary Report



City of Beech Grove, Indiana

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High-Risk Trees Assessment  
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## Executive Summary

The City of Beech Grove, under the direction of its Greenscape Commission (GSC), completed an inventory of all trees on city-owned properties and right-of-ways. The city was awarded a Make your Trees Count – Urban Forest Conservation Grant in the amount of \$2,200 to cover expenses. Aren Dottenwhy, Davey Resource Group, was hired to evaluate a list of trees deemed to be in the poorest condition. GSC members collected data for public trees beginning in the summer of 2009 and continuing through the spring of 2010. A total of 1092 trees were counted, which is considerably less than the 2500 trees we had anticipated.

Analysis of species diversity, relative age distribution, condition, and maintenance needs are detailed later in this report. These findings provide the information needed to plan for the future of our urban forest, growing and improving the overall health of this every important natural resource.

The GSC is currently looking at using the US Forest Service's Street Tree Resource Analysis Tool for Urban Forest Managers (STRATUM) to value the ecosystem service provided by Beech Grove's street trees. Setting a dollar amount on the value of services will be useful information as the commission seeks funding to grow and maintain its urban forest. The data will also strengthen our message to the community on the benefits provided by trees.

Commission members logged over 188 hours preparing this inventory; in planning, fieldwork, and recording data. Progress reports were shared with both the City Council and the Parks Board at their monthly meetings. The Commission will be working with the Directors of Public Works and Parks Department in keeping the inventory database up-to-date, recording removals, new plantings, and the performance of maintenance tasks. The 2009 Tree Inventory is a valuable resource for the city, but only as good as what we make it.

### Recommendations:

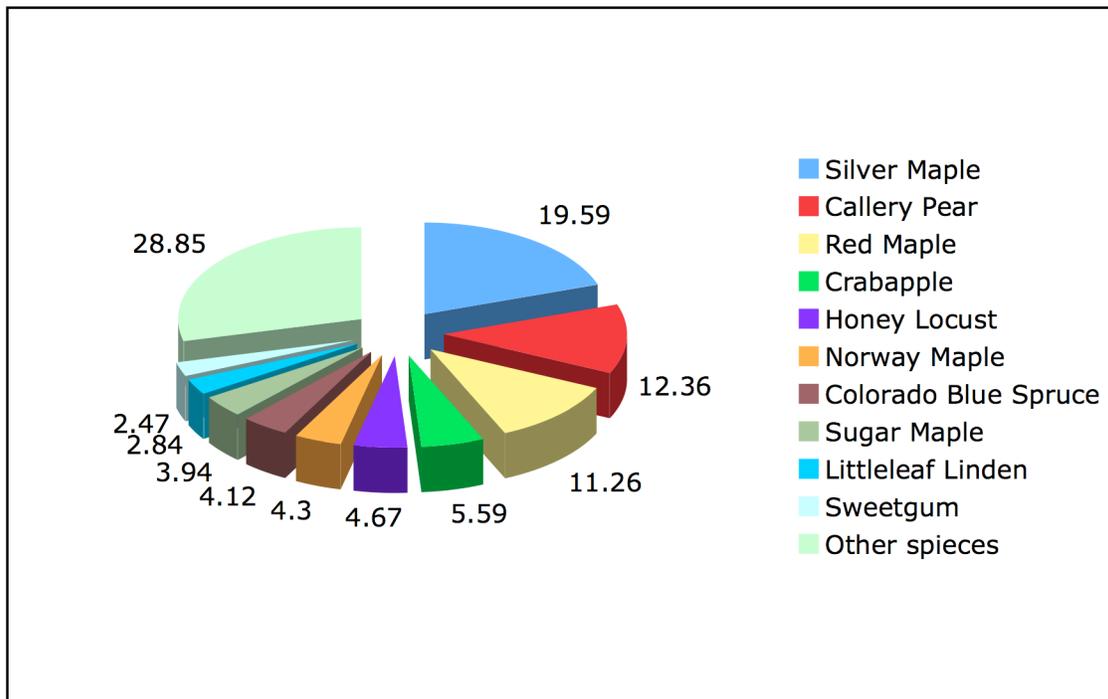
- Removals and maintenance tasks for trees on the Priority Maintenance List provided by Davey Resource be scheduled in order by priority ranking in as timely a manner as possible to reduce the potential of severe and high-risk situations.
- *Acer* (Maples) and Callery Pears should not be planted for at least the next few years. These are the predominate species in our urban forest and it is important that a greater diversity be attained.
- A plan for scheduling routine maintenance is developed.
- The city re-inventory trees in five to six years. After re-inventory, a comparative study will provide the information needed to assess progress towards achieving goals and setting new goals for the future.

## Findings and Recommendations

### Species Diversity

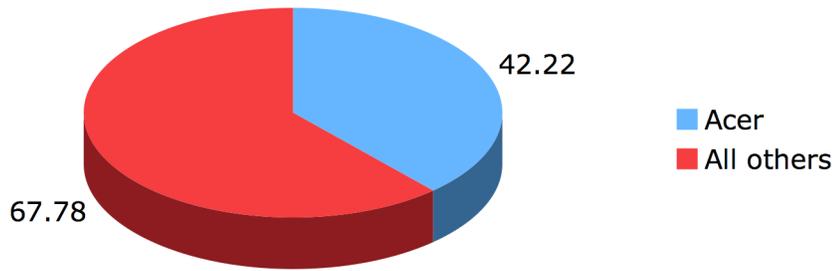
Diversity of species is very important to the overall health of the urban forest. The “Ten Percent Rule” suggests that one species comprise no more than 10% the street tree population. Silver Maples, Callery Pears and Red Maples each comprise more than 10% of Beech Grove’s total inventory, with Silver Maples representing 19.59%. (See *Appendix B*)

Silver Maples are currently on the Greenscape Commission’s list of Trees Not Recommended for Planting. Callery Pears and Red Maples should be added to this list and replaced with other species of the appropriate size class to promote diversity of species. It is further recommended that Street Tree Planting Permits be issued only for the largest tree size class appropriate for the planting site in order to maximize the benefits; i.e. small trees should not be planted on sites that would accommodate medium or large trees.



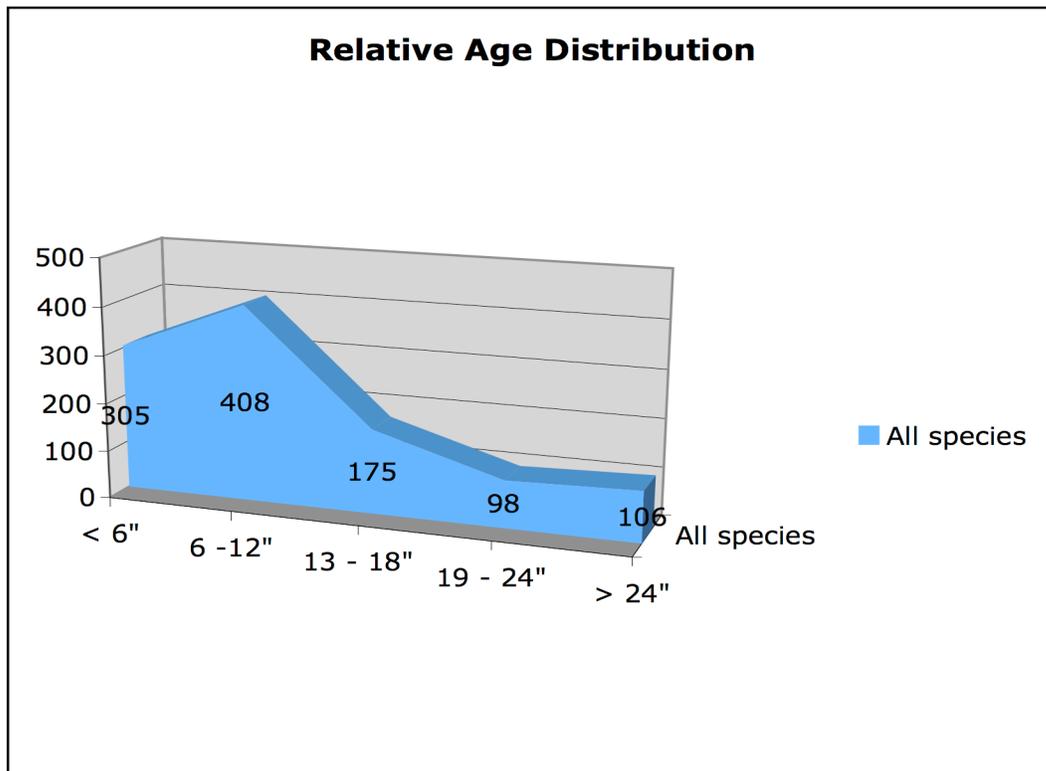
It is also recommended that no one genus should exceed 20%. Grouping all Maples, the *Acer* genus represents 42.22% of the total population. It is important to preserve existing trees in this genus to retain the benefits generated by their canopy cover, however no more *Acer* should be planted until a greater diversity of genus is achieved.

### Acer Population



## Relative Age Distribution

Using DBH as an indicator suggests that the relative age of the total populations is skewed towards young trees. Greater balance will be achieved as the younger large species trees mature. With 73.7% of all trees being of the large class size, future benefits may be achieved in a shorter amount of time than if existing trees were predominately of a smaller class size. (See *Appendix C*)



## Total Population

With a total of 1092 trees counted, and 58 recommended for removal, Beech Grove needs a concerted effort to plant more trees for both the economic and aesthetic benefits to the community. Planting trees in the large category should be a priority. Opens spaces in Beech Grove city parks and the wide planting strip along 5<sup>th</sup> Avenue are best suited to supporting large trees. (*See Appendix C*)

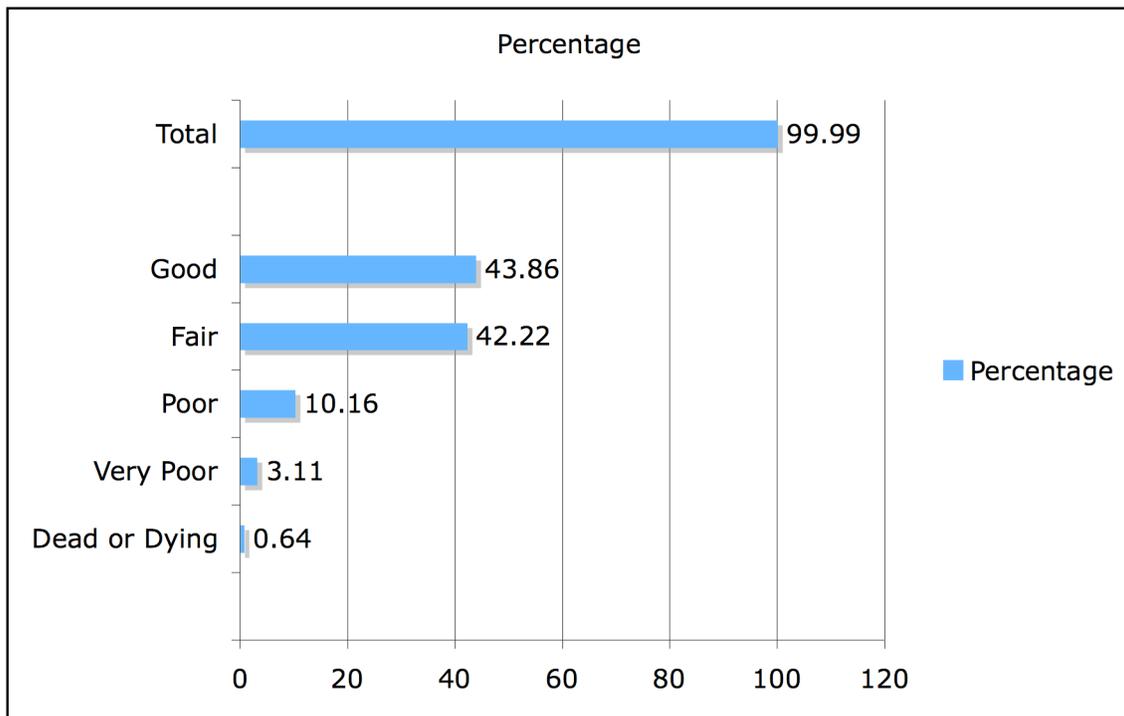
A large part the tree budget is currently spent on maintenance, and this trend is likely to continue. Therefore, the city should pursue any and all grant opportunities to provide funding for new tree plantings. Residents should be encouraged to purchase trees for planting on the street in front of their homes. The Greenscape Commission should consider establishing a dedicated donation fund to purchase trees for city parks and streets.

Establishing a tree nursery could provide savings by allowing the city to purchase smaller trees at a lower price and grow them to an appropriate size for planting. This has been discussed in the past, but at this time there is no site with a water source available.

It is further recommended that the Greenscape Commission create a campaign to promote the planting of trees on residential properties as well as other open spaces on business and City School properties. These trees would benefit both the individual property owners and the community as a whole. The majority of streets in the city do not have planting strips wide enough to support even small trees, but many neighborhoods have a significant number of mature yard trees and the absence of street trees is not noticeable. Timber Grove and Park Grove are two good examples.

## Condition

As noted in the chart below, 43.86% of all trees were observed to be in Good condition, 42.22% in Fair condition, 10.16% in Poor condition, 3.11% in Very Poor Condition, and .064% are Dead or Dying. This indicates that at least 56.14% of Beech Grove's tree population has maintenance needs. Of these, 58, or 5.3%, are recommended for removal. Many trees currently in Good condition have maintenance needs as well, in particular those planted within the last six years are likely to require new tree pruning and training to establish good structure for healthy growth and to avoid more expensive future problems.



The Beech Grove Greenscape Commission assigned Davey Resource 74 public trees, and Davey evaluated and additional 23 public trees. All 97 public trees were given a risk rating based on the USDA Forest Service Community Tree Risk Rating System, which consists of the probability of target impact, probability of failure, and size of defective parts. Of the 57 recommended tree removals, 6 trees are considered severe risk (Risk Rating 9 or 10); 30 trees are considered high risk (Risk Rating 7 or 8); 16 trees are considered moderate risk (Risk Rating 5 or 6); and 5 trees are considered low risk (Risk Rating 3 or 4). Of the 40 trees recommended for pruning, one tree is considered a severe risk; 15 trees are considered high risk; 16 trees are considered moderate risk; and 8 trees are considered low risk. (See Appendix D)

Tree Maintenance Recommendations and Risk Rating Matrix

	Severe Risk	High Risk	Moderate Risk	Low Risk	Maintenance Totals
Removal	6	30	16	5	57
Large Tree Clean	1	15	12	4	32
Small Tree Clean	0	0	4	0	4
Young Tree Train	0	0	0	4	4
Risk Totals	7	45	32	13	97

Maintenance issues are a significant challenge for the city. Tree work is expensive and available funds are limited. It is nevertheless essential that, as noted in the Sample Urban Statewide Tree Inventory (SUSI) report for Beech Grove, the maintenance needs of existing trees be taken care of for optimum health and benefits. Expenses in the short-term will yield large dividends later as the problems will only become more severe and more expensive to correct.

The ultimate goal is to get our urban forest into a healthy condition, after which an established schedule for routine maintenance can be followed.

It is recommended that:

- Removals and maintenance tasks for trees on the Priority Maintenance List provided by Davey Resource be scheduled in order by priority ranking in as timely a manner as possible to reduce the potential of severe and high-risk situations.
- Streets and Parks Departments determine which removal and maintenance tasks city workers, to avoid the costs of contracting work out to a private tree service, can do.
- The city should continue its policy of using private tree service contractors during the winter months whenever possible to take advantage of off-season discounts.
- The Greenscape Commission should investigate the possibility of inviting graduates of the Indiana Community Tree Steward Program to volunteer their time in our community. South 9<sup>th</sup> Avenue is one area where their expertise could be utilized with numerous crabapple trees in need of pruning.
- The tree inventory must be kept up-to-date. An accurate inventory is a cost-effective resource for budgeting, planning, and anticipating tree problems.

## Appendix A: Inventory Process and Definitions

Street trees and trees located on other city properties, such as parks and government offices, were included in this inventory.

Guidelines for determining whether individuals should be counted as street trees are:

- The tree is located in the planting strip between the curb and sidewalk.
- The tree is located in the right-of-way or easement where there are no sidewalks.
- The tree is located on a traffic island or median strip.
- The tree is not located on private property, even if the branches hang over the street or sidewalk.

In city parks and on other city properties, only those trees that would be replaced if lost were counted. This excluded areas of scrub trees, and trees in heavily wooded areas or along creeks running through the community.

### Data Collection Fields

Definitions of the data collection fields are included here. As the completed inventory is put to use, fields may be removed if the information does not prove useful, and/or additional fields may be added.

It should also be noted that individual tree information that includes data from the 2010 Maintenance and Risk Assessment conducted by Davey Resource are highlighted in bold print.

### **Zone**

Zone number indicates which Clean City Zone where the tree is located. The City of Beech Grove is divided into nine zones and defines areas utilized by the Department of Public works for trash collection, street sweeping, and other maintenance duties. This information allows for development of a tree maintenance schedule based on the zones.

### **No., DIR, Street Name**

These fields contain the address location of street trees. Parks and other properties are recorded in the Street name field only.

### **SD?**

SD? indicates whether a street tree is located in front of the house or other building for a particular street address (N = no) or on the side (Y = yes). This information is useful for locating trees on a corner lot.

### **Site**

Site is defined as:

- The width of the planting strip,
- L if the tree is located in a lawn area, or
- \* with further information noted in the "Notes" category.

### **Loc**

Loc, an abbreviation for Location, indicates the tree location where there is more than one planting site at the street address.

**Common Name, Botanical Name, Variety**

These fields represent the identity of each tree counted.

**Size Class**

Size class denotes the size class of the tree at maturity: Small, Medium, or Large. Size class is useful in determining whether a tree is an appropriate species for its planting site.

**DBH**

The urban forestry tree measurement standard for size is the trunk diameter, measured at breast height. Breast height is defined as 4.5 feet above ground level. DBH measurements are recorded in inches. Note: For trees with a twin or split trunk below 4.5 feet, DBH was measured at the standard height for the largest trunk above the split.

**Cond**

Cond, an abbreviation for Condition, denotes the overall perceived health of the tree.

Condition ratings are:

- G (Good) – no apparent problems
- F (Fair) – minor problems
- P (Poor) – major problems
- VP (Very Poor) – extreme problems
- D/D (Dead or Dying) – over 50% of the tree is dead

**Maintenance Needs/Notes**

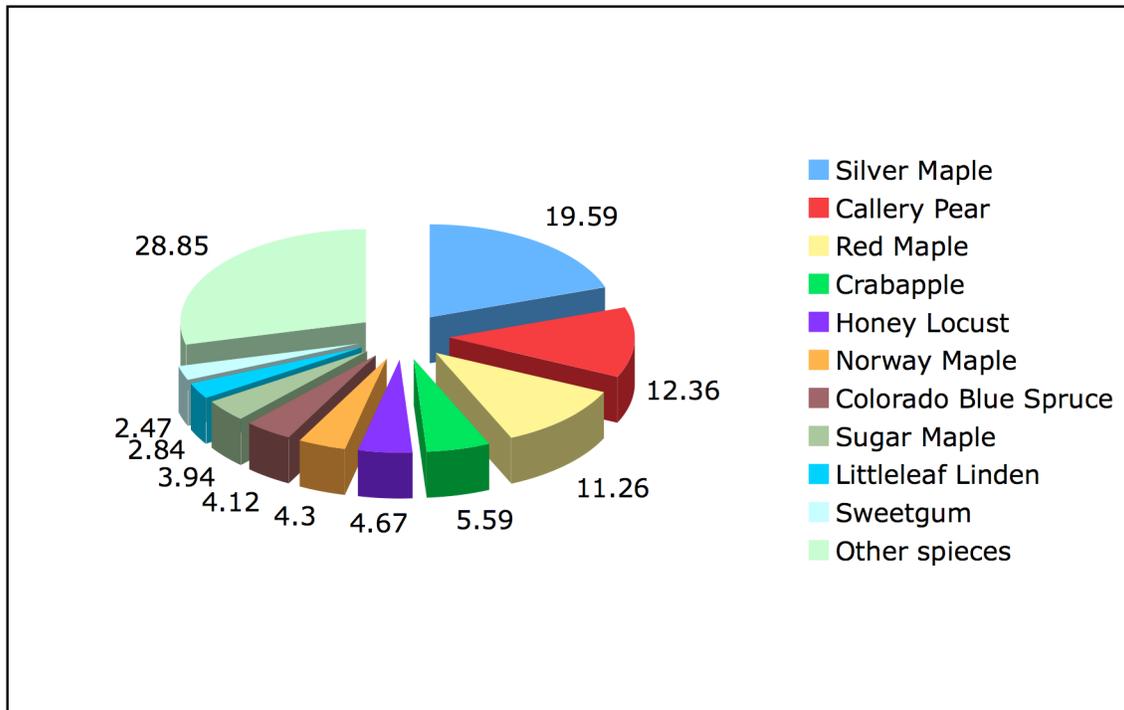
Data collectors used this field to note specific problems or structural defects, recommendations for care or follow-up, infrastructure damage, and other notable observation of the tree or its location.

**Primary Maintenance, Secondary Maintenance, Risk Rating, Observations**

These fields were added to incorporate the maintenance recommendations, risk factor ratings, and further observations provided by Davey Resource for trees that were part of their high-risk assessment.

## Appendix B: Species Distribution

Species	Percentage	Number
Silver Maple	19.59	214
Callery Pear	12.36	135
Red Maple	11.26	123
Crabapple	5.59	61
Honey Locust	4.67	51
Norway Maple	4.3	47
Spruce <i>species</i>	4.12	45
Sugar Maple	3.94	43
Littleleaf Linden	2.84	31
Sweetgum	2.47	27
Other species	28.85	315
Total	99.99	1092



Appendix C: Total Population/Relative Age Distribution

Species	<6"	6-12"	13-18"	19-24"	>24"
Fir <i>species</i>	0	1	0	0	0
Broadleaf Maple	0	0	1	0	0
Box Elder	0	0	1	0	0
Hedge Maple	1	9	4	0	0
Black Maple	1	2	2	0	0
Japanese Maple	0	1	0	0	0
Norway Maple	11	26	8	1	1
Red Maple	74	35	6	4	4
Silver Maple	10	47	64	47	46
Sugar Maple	0	9	22	9	3
Acer <i>species</i>	0	3	4	3	2
Buckeye	0	0	1	0	0
Tree-of-Heaven	1	0	0	0	0
Red Chokeberry	2	0	0	0	0
Gray Birch	0	1	0	0	0
Betula <i>species</i>	0	2	1	0	0
Shagbark Hickory	0	0	1	0	2
Catalpa	0	0	1	1	2
Hackberry	0	9	2	5	1
Eastern Redbud	4	8	1	0	0
Dogwood	11	1	0	0	0
Hawthorn	1	0	0	1	0
Beech	0	2	1	1	0
Green Ash	3	5	3	2	3
White Ash	2	1	2	1	2
Ash <i>species</i>	0	4	1	3	2
Honey Locust	7	44	0	0	0
Kentucky Coffee Tree	1	0	0	0	0
Black Walnut	2	2	2	1	2
Juniper <i>species</i>	0	1	2	0	0
Red Cedar	0	1	0	0	1
American Sweetgum	24	2	1	2	0
Tulip Tree	3	2	1	1	2
Crabapple <i>species</i>	12	47	2	0	0
Mulberry	4	1	0	0	0
Norway Spruce	2	1	0	0	0
Colorado Blue Spruce	0	5	0	0	0
Spruce <i>species</i>	19	25	1	0	0
Jack Pine	1	0	0	0	0
Austrian Pine	2	0	0	0	0
Red Pine	1	0	0	0	0
White Pine	8	2	4	0	0
Pine <i>species</i>	1	2	0	0	0
London Plane Tree	0	0	0	1	0

Sycamore	0	5	4	2	8
Cottonwood	0	1	2	4	5
Poplar <i>species</i>	0	1	0	0	0
Cherry Plum	4	3	0	0	0
Black Cherry	0	0	0	1	0
Prunus <i>species</i>	0	6	0	0	0
Callery Pear	73	46	16	0	0
White Oak	5	0	0	0	2
Chinquapin Oak	0	0	0	0	1
Pin Oak	2	3	3	1	1
Red Oak	0	0	0	0	1
Quercus <i>species</i>	4	3	2	4	7
Black Locust	1	3	3	1	2
Corkscrew Willow	0	2	0	0	0
Sassafras	0	1	0	0	0
Japanese Tree Lilac	1	0	0	0	0
Bald Cypress	1	2	0	0	0
America Linden	0	0	1	0	0
Basswood	2	2	1	0	0
Littleleaf Linden	2	26	2	0	1
Siberian Elm	0	0	0	1	5
Ulmus <i>species</i>	2	3	2	1	0
Totals	305	408	175	98	106

