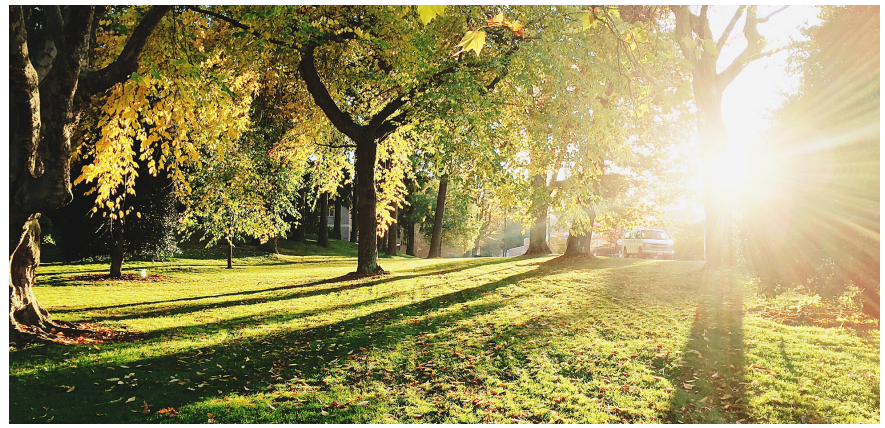# TREE INVENTORY

Overview

The City of Bloomington's urban tree canopy is an essential part of the city's infrastructure. Tree canopy provides quantifiable environmental, economic and social benefits, including but not limited to stormwater management and abatement, carbon sequestration, reduction of air pollutants, and reduced energy cost. Trees contribute greatly to the quality of life in our community, and with proper care and protection will continue to increase in value with each passing year. The urban tree canopy assessment assists the City of Bloomington in managing their urban forest and helps to:

- Set Canopy Goals
- Revise Policies Associated with Tree Canopy
- Promote the Benefits of Trees
- Develop Sound Urban Forest Management Strategies

Get Involved

Check out the Web-Based Story Map to learn more about the inventory. When you visit be sure to:

- Locate your favorite location using Urban Tree Canopy Map
- Find the max tree canopy for B-town
- List the top 5 public tree species

$55 MILLION
ECOLOGICAL & ECONOMIC BENEFITS

Trees store 720,000 tons of carbon valued at $33.4 million plus annually trees sequester 28,000 tons of carbon, remove 470,000 pounds of air pollutants, and manage 90.6 million gallons of stormwater runoff, all valued at an annually returned benefit of $1.9 million.

38%
URBAN TREE CANOPY

The Urban Tree Canaopy Analysis found that 38% of Bloomington is covered by tree canopy and 34% of the city is covered by impervious surfaces, such as roads and buildings.

19,013
STREET & PARK TREES

In 2019, urban foresters from Davey Resource Group assessed and inventoried street (17,541) and park trees (1,472) as well as stumps (741) and planting sites (4,617) along public streets in Bloomington.

DAVEY

CITY OF BLOOMINGTON
Parks and Recreation

City of Bloomington:
Revisions to the Tree Care Manual & Urban Forestry Plan

Kathryn Shay
Daniel Ishmael
Anne Marie Cleary Rauker

Indiana University 2019

<u>Revised Urban Forestry Plan 2020-2025</u>

Mission Statement
The City of Bloomington has a legal and moral obligation to maintain healthy and safe trees on municipal land and public streets. The Urban Forestry plan is designed provide reasonable and responsible methods for improving the health of the City, the aesthetics of its neighborhoods, and to reduce tree-related problems

Goal and Objectives
To maintain the health of the existing street trees and provide for the future planting of trees in the vacant spaces throughout the streets of Bloomington.

- To enable and incorporate citizen and neighborhood input into the process of establishing a pre-approved list of replacement tree species to be planted when a street tree is removed.
- To ensure diversification of tree species throughout the City and within each major section of the City, as a key measure to ensure the resiliency of the urban forest to climate change and other related threats.
- To ensure each viable space in the City is utilized for planting.
- To maintain Tree City USA status for the City.
- To implement and maintain an up-to-date tree emergency plan
- To designate appropriate new and replacement tree species for specific locations based on the species' aesthetic interest, adaptability to the streetscape environment, size of the planting space, presence of overhead and underground utilities, and ease of long-term maintenance.
- To utilize 2019 tree inventory and canopy cover assessment to shape management and planning priorities.
- To update tree inventory database with planting, removal, and maintenance activities.
- To provide educational resources and opportunities that enable and encourage active community participation in the management of the urban forest.
- To enhance community understanding of the benefits provided by a resilient urban forest.
- To improve communication and collaboration between development agents, community agents, and government agents to ensure the long-term health and resilience of the urban forest.
- To preserve and enhance the urban forest in respect to threats from climate change.

Key Principles and Policies
1. It is the policy of the Mayor and Council of Bloomington that the City will have tree-lined streets. Therefore, it is a goal that each planting space available in the City will receive a tree.
2. A street tree will be removed and replaced if it is dead or dying, or becomes hazardous by developing structural defects that can lead to failure of the whole tree or large portions of the tree. If a healthy tree is removed due to an approved

development or city infrastructure project it will be transplanted or a new planting of an equal or greater number of trees of similar quality will be sought.

3. The species designated for a particular street is subject to change if a majority of residents on the street agree, and as long as the alternate selection(s) meet all of the criteria of the City's Tree Care Manual. Once replacement begins, no further changes can be made other than in cases where the species is removed from the approved planting list.

4. The goal of the Urban Forestry Plan is to select the best new or replacement trees for specific locations-taking into account planting space, overhead lines, etc. Other objectives are to diversify tree species within neighborhoods, enhance sightlines for pedestrian and other traffic, and to provide uniformity on streets.

5. All contracted tree maintenance will be conducted by a certified arborist.

6. The City of Bloomington is committed to maintaining healthy and safe trees on municipal lands and public streets, and it is the mission of the Parks and Recreation Department to establish and sustain a healthy, long term, stable urban forest. To this end, the urban forestry program will require continuing review and analysis, planning, and forest management with emphasis on improving the health and the quantity of our trees. The Urban Forestry Plan is a statement of this mission and some measures to take responsible care of City trees. It is also a forward-looking plan to reduce tree-related problems and to beautify the City of Bloomington.

For more information, contact XXX XXX, Urban Forester, at (XXX) XXX-XXX or XXXX@bloomington.in.gov.

Please note: This Urban Forestry Plan covers only those streets maintained by the City of Bloomington. Residents along state roads may contact the Indiana Department of Transportation. Residents in private communities should contact their homeowners association or facilities management.

General Suggestions for the Tree Care Manual
Information about the City Tree Inventory
- Design page for inventory
    - Here is an editable link to a page design made in Canvas
        - https://www.canva.com/design/DADq0k_iKs0/share/preview?token=xFTi6mhLhGqA7XGaiNJrog&role=EDITOR&utm_content=DADq0k_iKs0&utm_campaign=designshare&utm_medium=link&utm_source=sharebutton
    - Suggest editing the colors/fonts to match the branding of the Tree Care Manual (Do not have access to information)
    - Need to approve logos for City of Bloomington and Davey
- Background Info
    - Recommend using text from the executive summary
    - Provided edits to the general text - additionally switching from passive voice to active voice is recommended
    - **"The City of Bloomington's urban tree canopy is an essential part of the city's infrastructure. Tree canopy provides quantifiable environmental, economic and social benefits, including but not limited to stormwater management and abatement, carbon sequestration, reduction of air pollutants, and reduced energy cost. Trees contribute greatly to the quality of life in our community, and with proper care and protection will continue to increase in value with each passing year. The urban tree canopy assessment assists the City of Bloomington in managing their urban forest and helps to:**
        - **Set Canopy Goals**
        - **Revise Policies Associated with Tree Canopy**
        - **Promote the Benefits of Trees**
        - **Develop Sound Urban Forest Management Strategies"**
- Metric info
    - Use information from the executive summary, but make it more user friendly → highlight 3 important statistics
    - **$55 million**
        - Ecological & economic Benefits
        - Trees store 720,000 tons of carbon valued at $33.4 million plus annually trees sequester 28,000 tons of carbon, remove 470,000 pounds of air pollutants, and manage 90.6 million gallons of stormwater runoff, all valued at an annually returned benefit of $1.9 million.
    - **38%**
        - Urban Tree canopy
        - In 2019, urban foresters from Davey Resource Group assessed and inventoried street (17,541) and park trees (1,472) as well as stumps (741) and planting sites (4,617) along public streets in Bloomington.
    - **19,013**
        - Street & Park Trees

- In 2019, urban foresters from Davey Resource Group assessed and inventoried street (17,541) and park trees (1,472) as well as stumps (741) and planting sites (4,617) along public streets in Bloomington**.**

- How to access and use the inventory
    - https://gis.davey.com/BloomingtonINTrees/ (have a QR code for paper copies- easier to access than a link) → however we recommend supplying a link and the QR code so that those unfamiliar with QR codes are still able to access easily
    - Create action steps for users (i.e. a checklist of items to complete when reviewing the information. Suggest 3-4 items so it isn't overwhelming)
        - **"Check out the Web-Based Story Map to learn more about the inventory. When you visit be sure to:**
            - **Locate your favorite location using Urban Tree Canopy Map**
            - **Find the max tree canopy for B-town**
            - **List the top 5 tree species"**

Research and recommended specific trees
- Recommendations based on climate change projections for 2100.
    - Phillips, R.P., Brandt, L., Polly, D., Zollner, P., Saunders, M.R.,Clay, K., Iverson, L., and S. Fei. (in review). Towards an improved understanding of the ecological and economic consequences of climate change for Indiana forests. *Climatic Change*
    - **Additions to approved list**: Black hickory, black oak, blackjack oak, cherrybark oak, cittamwood, eastern redcedar, mockernut hickory, post oak, silver maple, sourwood, sugarberry, water oak
    - **Additions to undesirable list**: Basswood, black maple (may adapt), bur oak (may adapt), ohio buckeye, sassafrass, serviceberry, sugar maple, swamp white oak

Other Suggestions
- From the perspective of a homeowner / someone adjacent to public right-of-way
    - Need to breakdown this document into individual flyers/packets to reduce page length and overwhelming users with information
    - Remove passive voice and replace with active voice to engage readers
    - Add more images of Bloomington trees, community members + trees, tree care management scenes (pruning or proper mulching)
    - Use color blocks to denote important information

- - Add text over an image by using a slightly transparent color block (70-80%)
- Layout/design
  - Follow a "blog" style to catch readers attention
    - Maximize white space and minimize text blocks
    - Variation of font sizes and colors to separate sections/important information
- Recommendations for updating existing information
  - Move tables to an appendix and use the data to make infographics (bar graphs, pie charts, etc.) to highlight important aspects of the species for street trees.
    - Helpful purchasable software:
      - Adobe suites
      - Excel
    - Helpful free software:
      - Tableau (https://public.tableau.com/en-us/s/)
      - Canva (https://www.canva.com)
  - Convert link information into a QR code for better accessibility (but provide both links and QR codes)
    - Free QR Code Generator: https://www.qrcode-monkey.com
      - Can change color, add logo, and customize design

- Recommendations for new information
  - Add section for containerized trees under "Planting Procedures"
  - Add section about soil volume
  - Add step instructions for root pruning
    - Include photo of encircling root

Page Specific Suggestions for the Tree Care Manual

Page 3
- Change upper photo to a real image or a colored version for the drawing.
- For "Know what's below. Call before you dig." Change font, make bigger size, and maybe a green color to grab the readers attention
- Break down text by adding headers with the most important takeaway (increases readability + provides quick tips). For example: "Plant in the Spring" , "Locate Utilities before You Plant" , "The Do Not Plant List"

- "Where can you plant a tree?
    - o You can plant a tree in your private yard or along the street on city property.
    - o The City of Bloomington strives to have beautiful trees lining the streets, but wherever trees are planted they must coexist safely with public infrastructure like utility lines, streets, sidewalks, buildings, and signs.
- What do you need to consider BEFORE planting a tree?
    - o You should first ensure that the space you choose has enough room for the tree to grow to mature size. Look at the space between the sidewalk and street, and look above for power lines, phone lines, or streetlights that cannot be blocked. Make sure you choose the right tree for the spot; consider tree color in spring and fall, the scale of the planting, and the final shape of the tree when selecting and designing your planting area.
    - o Remember: ALWAYS CALL 811
- When should you plant the tree?
    - o Trees can be planted any time generally, see ____ for more information!"

Page 4
- Use the white space on the left side. Fill with photos, fun tree facts, quick tips for tree placement
- Bold key statistics for tree placement. Recommended photos.
- Reduce text on each bullet point or make into subparts (too text heavy)

Page 5
- Need to reduce text or change layout so that the page number on the bottom is visible.
    - o Could move this mulching section to previous page or the next since there is white space. Then reorganize to fit the diagram and step by step instructions
    - o Move the Balled and Burlapped Tree section to next page so information is on the same page
- Make the numbering start again for Balled and Burlapped Trees section
- Divide #6 into more bullet points so it increases readability
- Add QR codes for better accessibility

Page 6
- Use the white space by adding photos, fun facts, more diagrams for planting.

- Or use the white space to have all the steps for balled and burlapped trees section
- Add a header to note what the steps are referring to ... i.e. " Planting Procedure for Balled & Burlapped Trees"
- Bold key stats for the Care of New Trees section ... such as "five to 10 days"
- Be consistent with numbers, either use spell out or use the numbers (five or 5)
- Have a separate section for staking information + header
- Add QR codes for better accessibility

Page 7
- Add QR codes for better accessibility
- Use white space for photos, break up text, QR code, quick facts

Page 8
- For "Tree topping is not an accepted pruning method", change the font, make a bigger size, and adjust color to grab the readers attention
- Consider adding images that show the 4 approved pruning techniques (requires adjusting format and using previous pages white space) and a better topping picture
- Add an image of CRZ and reduce text description. bold key takeaways (i.e. definition) OR remove/ this section since page 9 has CRZ info.
- For "No tree topping allowed" and "Eight Good Reasons Not to Top a Tree", make large font/change color to grab the readers attention
- For the Eight Good Reasons, capitalize the first letter of each point and expand on the ideas (add a real pic of a topped tree)

Page 9:
- Need higher resolution on upper image: cannot read text on computer (still difficult to read on paper version)
- If possible, reformat so page number is visible
- Convert table into a bar graph or emphasize a key point of the data (i.e. use this formula to find the structural Critical Rooting Distance)
- Useful information could be summarized, since CRZ is explained on the previous page:
  - "Here is a formula to use to determine the CRZ (in feet of radius) of your tree: DBH of your tree (in inches) * 1.5
  - Use this formula, or the table below with general guides, to enable to you maintain a safe distance from the trunk of your tree while doing any alteration to the surrounding area."

Page 10
- Use the white space for images to explain info on the page (material storage, sidewalk construction, trenching/tunneling)
- Breakdown the Sidewalk Construction and Repair by using sub-headers to explain a key point ("City Zone Laws: Sidewalks Must be 5 ft Wide"
- Bold key words/concepts in each section (such as the Four by Four by Four Rule **Also maybe say 4x4x4 Rule to reduce text space)

- Suggest converting text to in bullet points, with short bursts of information to increase readability

Page 11
- Add QR codes for links to improve accessibility
- Use the white space for images to explain info on the page
- Bold key words/concepts in each section
- Capitalize the first letter of each point for Obtaining a Tree Work Permit

Page 12
- Fix the spacing on the first paragraph
- Edit the table using Tableau
- Capitalize "only"

Page 13
- Fix the spacing on the paragraphs. -Bold key takeaways.
- Edit the table using Tableau
- Capitalize the first letter of each word in the comments section

Page 14
- Increase font size for "Native tree species are indicated in bold"
- Edit the table using Tableau
- Capitalize the first letter of each word in the comments section (or don't but be consistent)
- Add a higher resolution of the image- difficult to see on computer (OK on paper)

Page 15
- Increase font size for "Native tree species are indicated in bold"
- Edit the table using Tableau
- Capitalize the first letter of each word in the comments section (or don't but be consistent)
- Edit table using Tableau

Page 16
- Edit the table using Tableau
- Capitalize the first letter of each word in the comments section (or don't but be consistent throughout the document)
- "Alleotrophy" may instead refer to "allelopathic"

Page 17
- Edit the table using Tableau
- Bold key phrases/takeaways

Page 12-17 (General suggestions)
- Next to the common name have the scientific name in (___) - no need for a new column
- Instead of "recommended cultivars", perhaps call second column "additional comments and recommended cultivars" to be more clear

- Tree planting by season and species is confusing --suggest a more general "when to plant" and delete the tables
- Recommend consolidating and making easier to read and search through

Page 18
- Refer to the Revised Urban Forestry Plan 2020-2025 for suggestions

Page 19-23
- If possible, remove the municipal code and replace with a QR code/link for people to access it

Page 24
- If possible, remove the tree work permit and replace with a QR code and link for people to access it

Page 25
- Change the format/ spacing to move the pictures up to make page number visible
- Add a color box behind text (make it 80% transparent) to help make font more visible
- Recommend moving this page up because it is useful flyer / quick guide

Page 26
- Change the format so the pictures are bigger (like a 2x3 grid)
- Add the labels using the colored box at 80% transparent)