Committee Members
Mary Knittle, Chair
Evelyn Herwitz, Vice Chair
Patricia Austin
Ted Conna
Nathan Fournier
Mary Leovich
Deirdra Murphy

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Department of Sustainability and Resilience
Our Mission:
To implement the ambitious and urgent goals of the Green Worcester Sustainability and Resilience Strategic Plan (GWP), a roadmap for making Worcester the greenest mid-size city in the country.

Our Staff:
John Odell, *Chief*
Jessica Davis, *Project Manager*
Robert DeFosse, *Energy Services Manager*
Gabi Hajos, *Energy Advocate*
Miranda Hotham, *Zero Waste Coordinator*
Killian Madden, *Energy Advocate*
Sarah Mount, *Energy Analyst*
Nick Pagan, *Senior Environmental Analyst*
Luba Zhaurova, *Director of Projects*

Accessibility:
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Translations:
Hay disponibles servicios de interpretación y otras adaptaciones con solicitud previa. Avisanos por greenworcester@worcesterma.gov

CITY OF WORCESTER
Meeting Minutes
Green Worcester Advisory Committee

Monday, September 18, 2023, at 5:30 p.m.
Location: Meeting Room A, 50 Manny Familia Way

Chair Knittle called the meeting to order at 5:38pm.

Present
Mary Knittle, Chair
Evelyn Herwitz, Vice Chair
Patricia Austin
Ted Conna (online)
Mary Leovich (online)
Deirdra Murphy (online)

Absent
Nate Fournier

Staff
John Odell
Sarah Mount

1. **Welcome.** Chair Knittle facilitated the meeting and read the meeting rules.
2. **Approval of Minutes – July 31, 2023** *(Attachment A)*

i. The committee unanimously approved the July 31st, 2023 minutes with minor grammatical edits.

3. **New Business**

a. Presentation on a survey of trees planted after the ALB infestation 10 years later by John Rogan, Clark University (30 minutes and Q+A) (Attachment B)

ii. Professor John Rogan and his team from Clark presented their findings from a tree health assessment of trees planted in the Asian Longhorn Beetle Regulation Zone between 2008 and 2023 and a series of residential interviews with residents who received the trees.

iii. Chair Knittle congratulated the Clark team on their work and their presentation.

iv. Vice Chair Herwitz thanked the presenters for their work and showed concern for their finding that trees planted on private

property fare worse than trees planted on public land. She explained that for the city to meet its goals, the city will need residents to plant trees on their properties. She asked the Clark team if they have any suggestions for how to get residents to both plant and care for trees on their properties. The Clark team responded that involving the residents in the planting process is crucial to the tree's future success. They noted trees are particularly at risk when a home changes owners – new owners often remove mature trees. The team explained that increased communication between the Department of Conservation and Recreation (DCR) and the tree recipients helped increase the tree survival rates and theorized that a contract between the governmental agency planting the trees and the homeowners may also increase survivorship. Vice Chair Herwitz followed up that communication will be key and managing the trees within the first three years is critical.

v. Chair Knittle added that she has worked closely with the Worcester Tree Initiative (WTI) during the time the trees were planted. Part of the WTI was a youth urban tree forester program where youth were paid to care for the trees. The program helped young people foster a love of trees and engaged the whole community. She also thanked Ruth Steward for her crucial role in the success of the WTI.

vi. Chair Knittle asked if Tulip trees and Ginkgo Trees were interchangeable, and if the Tulip tree's reputation for breaking up sidewalks is accurate. The Clark team responded that the Tulip and the Ginkgo are not the same tree, and that they did not measure the effects the trees had on the sidewalks.

vii. Member Conna was surprised to learn how much better the public trees did than the private trees. He suggested that if we use public funds to plant trees on private land, the city should institute a retention contract. Mr. Rogan commented that there is an enormous complexity to tree management and how trees get treated across the city.

viii. Vice Chair Herwitz asked if the Clark team knows why the Ginkgos did not do very well in the city. The Clark team suggested that the Ginkgos might have been slow growing, and that the street trees might have received more sunlight and perhaps the Ginkgos planted on private property might have received more shade. The Clark team discussed the Ginkgos' non-viability with DCR, and DCR could not explain the result either. Mr. Rogan also noted that warm winters followed by extreme cold snaps in the spring tend to harm trees.

ix. Member Leovich, responding to Member Conna's suggestion of utilizing contracts, noted that the city needs use caution when using contracts which imposing regulations on residents. Residents who agree to receive a tree are doing the city a favor. Member Conna responded that the favor went both ways – the owners are allowing the city to plant a tree and the city is providing the owners a free tree. Member Murphy recommended instead of contracts we highlight that the city can help residents support a new tree. She explained she often helps people plant gardens and

people can be overwhelmed by the process of taking care of new plants. The Clark team responded that contracts were just an example of what the city could do. They also noted that trees had a better survival rate when government agencies, before planting the tree, asked residents what they imagine their backyard will look like in five to fifteen years' time, and then planting trees around those plans. I.e., if a resident plans to build a pool next year, agencies wouldn't plant a tree in the future site of the pool. Member Conna emphasized that the transition from one homeowner to another is a tumultuous time for the trees as new homeowners tend to change the home to fit their needs. He asked if a contract may be able to carry over from one owner to another. The Clark team responded that they are investigating the effect of homeownership on survival rates.

x. David Coyne, a resident of Worcester, asked if it was possible to send out a letter to a residence about the importance of trees when a property changes hands. He estimated that about 1,500 homes change ownership annually in Worcester, and that if we sent a letter, in ten years' time the letter would reach 20% of Worcester homeowners. He also asked if the City should promote planting shorter trees that will not shade roofs – preventing the installation of solar panels. Jason Pincomb, a realtor in Worcester, responded to Mr. Coyne. He stated that Worcester has sold 625 homes in the past six months and an estimated 1,250 homes in the past year. He indicated that these numbers are low, and that Worcester should see 5,000 homes transferring home ownership annually. He also noted that inspectors tell homeowners that trees should be at least six feet away from homes to prevent the roof from deteriorating.

xi. Member Murphy thanked everyone for their good points and stated that people save what they find valuable. Trees should be heralded for what they do for the community and residents, and this research helps promote that.

4. DSR Updates (15 minutes)

a. Specialized Stretch Code (Building Energy Code) Update *(Upcoming 9/19 Hearing)*

i. Mr. Odell stated that the Specialized Stretch Code will be reviewed by the Economic Development Subcommittee on September 19th, and with a recommendation from the subcommittee, the code will be brought back to the city council for a vote. If passed by the council, the specialized stretch code will go into effect July 1, 2024. He also mentioned that representatives from the Massachusetts Department of Energy Resources will attend the Economic Development subcommittee meeting on September 19th to answer any questions people might have.

ii. Mr. Pincomb reiterated that housing stock is at an extreme low. He cited an MIT-Wentworth study looking at the cost to build houses under the new code. The study estimated there will be a 1.8 – 3.8% building cost increase for building a multi-family or single-family home. Mr. Pincomb also implied that large renovations or additions to existing homes would trigger the new stretch

code and require homeowners to upgrade their existing home to become all electric. Mr. Odell responded that the new specialized stretch code will not have any impact beyond what our current code requires on existing buildings. The specialized stretch code will only add language regarding new construction. Mr. Pincomb concluded with an anecdote about the difficulty selling a home with solar due to transferring the loans.

b. Green Worcester Plan Summit
    i. Mr. Odell stated that there is no update on the Green Worcester Plan Summit, but it is still a priority for the city.
    ii. Member Austin gave her support for the summit and offered to help the Department of Sustainability and Resilience's staff with the event. She underlined that this event will help highlight what the City has done and garner public support for future sustainability actions.

c. Grants:
    i. MVP Grant: Miyawaki Forests (Attachment C)
        1. Mr. Odell relayed that the city received 409k dollars from the State to fund the design and planting of two Miyawaki Forests in the city and design of two additional community green spaces.
    ii. USDA Forestry Grant
        1. Mr. Odell relayed that the city did not receive the USDA Forestry Grant. The City has reached out to the USDA to ask for feedback. Mr. Odell insisted that the work was not for nothing, and DSR will repurpose the grant as much as possible.
        2. Member Conna asked if we will be able to review the grant applications of other cities who received the funding. Mr. Odell believed that the applications are public, but he will confirm.

d. Community Engagement:
    i. Flood Watch promotion: Blog (Attachment D)
        1. Mr. Odell described the City's Flood Watch program. The city is collecting data on where residents are experiencing flooding in the city. Residents are welcome to sign up to participate on the City's DSR webpage and then upload their photos.
    ii. Mobility Action Plan survey
        1. Mr. Odell stated that there is a survey on the Department of Transportation and Mobility's city webpage. The survey allows residents to share their experience moving around the city. He encouraged all residents to fill out the survey.
        2. Mx. Mount corrected that the survey recently closed and that DTM has started to compile the data. Mr. Odell suggested people email DTM if they still wanted to participate in the survey.

e. Staff:

i. *Zero Waste Coordinator (Started 8/28)*

1. Mr. Odell stated that Miranda Hotham joined the city as the new Zero Waste Coordinator on August 28th.

ii. *Energy Advocates (Started 8/28)*

1. Mr. Odell stated that Gabi Hajos and Killian Madden joined the City as energy advocates on August 28th. Mx. Mount relayed that Gabi and Killian will be attending the next GWAC meeting to talk about the SMART Energy Advice Program and that anyone may email the pair at energyadvice@worcesterma.gov.
2. Chair Knittle added that MassSave will soon offer incentives for installing electrical vehicle charging stations for low-income residents.

iii. *Staff Assistant (Starting 10/02)*

1. Mr. Odell shared that a new Staff Assistant will be starting on October 2nd.

iv. *Lakes & Ponds Coordinator (Interviewing)*

1. Mr. Odell shared that the City is concluding their first round of interviews for the new Lakes and Ponds Coordinator.

5. Review and Discussion

a. First Green Worcester Progress Report Draft, April 2021 – July 2023 *(Attachment E)*

i. Mr. Odell communicated that the First Green Worcester Progress Report Draft is still under development. DSR expects to have a copy for the committee to review by the next meeting.

6. Standing Items

a. Community Outreach

i. *Housing with a H.E.A.R.T., September 7th, 2023*

1. Mx. Mount relayed that Gabi Hajos, the new energy advocate, and Jessie Davis tabled at the HEART event on September 7th at the JMAC. They spoke to many people who were interested in our work and eight signed up to learn more about home energy assessments. To learn about the HEART project, go to masscec.com and search for Worcester HEART partnership.

ii. *WPI Climate Adaptation Tour*

1. Member Conna hosted a Climate Adaption and Resilience tour for WPI students. While preparing for the tour, he realized that hosting a tour that focuses on the city's topography, infrastructure, climate impacts, etc. would be a good way to teach the general public as well – not just graduate students.

b. Community Feedback

i. *Worcester Magazine, 'Building code could help city in battling climate crisis' by Ted Conna and Paul Popinchalk (Attachment F)*

c. Media

d. Upcoming Events (not DSR organized)
    i. Solar Fest, Rutland, VT, Saturday, October 28th
        1. Member Conna shared the rescheduled date for the Vermont Solar Fest Event.
    ii. Clark Seminar Series
        1. Member Conna shared that Clark is hosting a seminar series at the George Perkins Marsh Institute. Three of the seminars are climate related: From Denial to Delay: Obstruction of Action on Climate Change on September 28th; The Climate Crisis: How Did We Get Here and What Can We Do? On October 26th; and Decarbonization and its Discontents: A Critical Justice Perspective on Four Low-Carbon Transitions on November 9th.
    iii. Westborough Senior Center, Weatherman Talks
        1. Member Conna shared that Harvey Leonard, a local weatherman, is presenting a talk on Climate Change at the Westborough Senior Center on Wednesday September 20th.

The committee voted unanimously to adjourn the meeting at 7:20 pm.

Attachments

Attachment A: July 31, 2023 GWAC Minutes

Attachment B: Tree Analysis Presentation Slides

Attachment C: Miyawaki Forest City Council Memo

Attachment D: Green Worcester Dashboard Blog

Attachment E: Green Worcester Annual Report Draft

Attachment F: Worcester Magazine Article, "Building code could help city in battling climate crisis"

2023 Upcoming Meetings

Green Worcester Advisory Committee meetings begin on Mondays at 5:30pm:

October 16	*Esther Howland*
November 27	*Esther Howland*

**Meeting Room A is located at 50 Manny Familia Way.*

Virtual Meeting Information

This meeting will be held in-person at the date, time and location listed above. Meeting attendees will have the option to participate remotely by joining online or by phone. Note: If technological problems interrupt the virtual meeting, the meeting will continue.

Web: Use the following link to join the meeting via Microsoft Teams on the computer, click here to join the meeting

, or

Call: +1 469-998-7682,,182502054#. **Access Code**: 182 502 054#.

Human Environment Regional Observatory (HERO) 2023 Stakeholder Presentation

Assessment of tree health and resident perspectives in the Longhorned Beetle Regulation Zone from 2008 to 2023

Aaron Richmond-Crosset,
Adlai Nelson, Amritha Pai,
Caleb Kluchman, Ksenia Smart, Ramón Colón, Tanner Honnef

2023 Study Objectives

Biophysical Assessment:
Monitor growth and survivorship of trees planted between 2010-2012 by the DCR and Worcester Tree Initiative after the LB outbreak

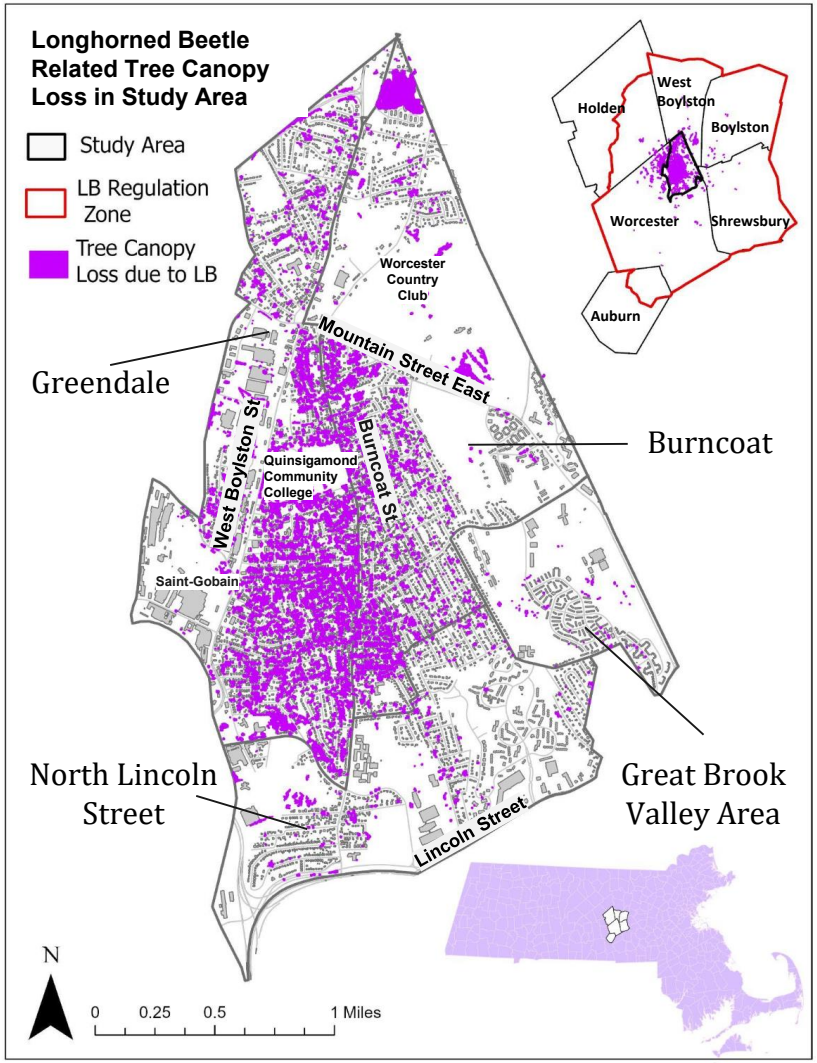
What is the current status of tree health and structure and what factors have the greatest impact on tree health and structure?

How does the tree health and structure compare to the past HERO tree survey?

Social Assessment:
Interview neighborhood residents in the study area to understand perceptions of trees and post-LB tree planting initiatives

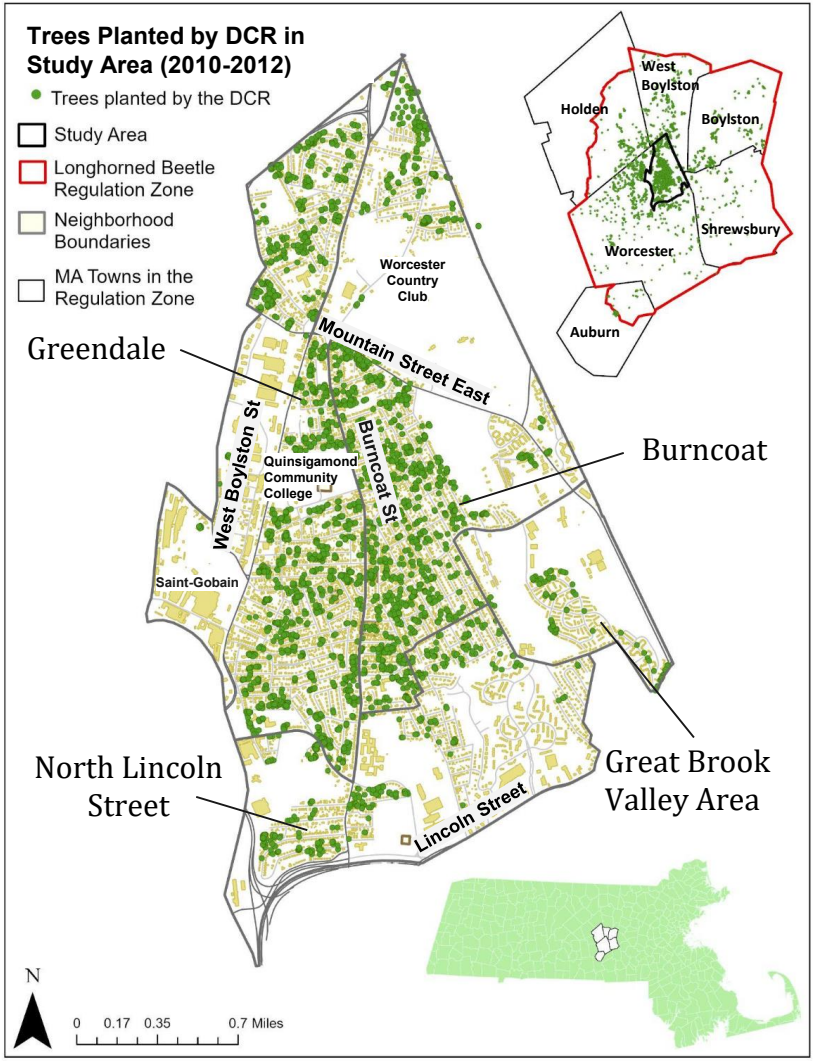
How do residents perceive the role of trees and DCR's tree planting initiative on their property and in their neighborhood?

How do residents' past experiences and beliefs impact tree stewardship?



The Longhorned Beetle in Worcester

- Longhorned Beetle found in Worcester in 2008
- Worcester's urban canopy is contiguous with the hardwood/maple forests of the Northeast
- 337 sq km regulation zone enacted around the infested area
- Large scale, proactive tree cutting program launched by the USDA working with the DCR
- ~34,196 trees removed by Oct 2014
    - At the time, was the largest US infestation in terms of trees removed
- Tree loss concentrated in Study Area



DCR Tree Planting Program

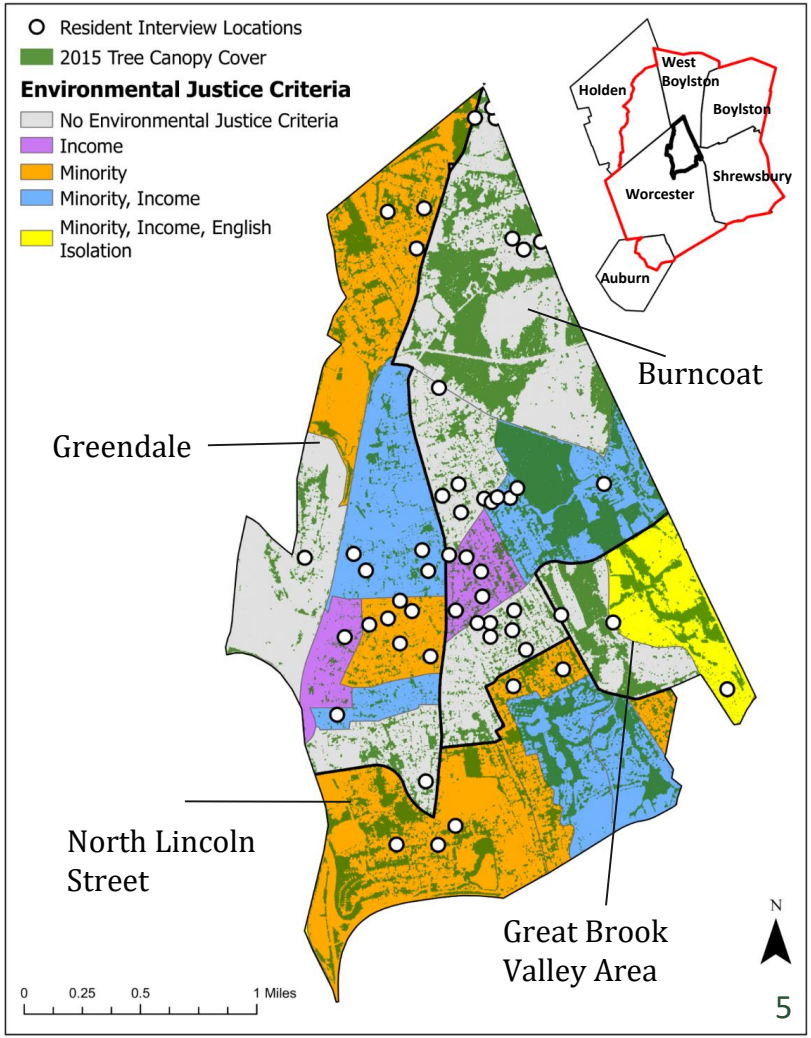
- The DCR's tree planting program planted 17,000 trees to rebuild the region's urban canopy
- ~7000 trees planted in our study area
- Tree planting began in spring 2010 and continued until 2017 - first trees were planted in study area
- Funded by the American Recovery and Reinvestment Act (ARRA)
- High proportion of arborvitae were initially planted to keep up with the large demand for trees to plant
- Sourced trees from Bigelow Nursery

Neighborhoods in Study Area

Study area comprises Worcester neighborhoods: Burncoat, Great Brook Valley Area, Greendale, and North Lincoln Street

Massachusetts defines Environmental Justice areas as census tracts which meet certain criteria, including:

- Annual median household income is 65% or less than statewide figure
- 40% or more of population is racial minority
- 25% or more of households speak English less than “very well”



Neighborhood Social and Biophysical Comparison

Socioeconomic Variables	Greendale	Burncoat	Great Brook Valley Area	North Lincoln Street
Percent English Limited*	2.5%	11%	27%	9.9%
Percent White***	64%	69%	21%	43%
Percent Renter**	43%	21%	96%	60%
Median Household Income*	$86,851	$72,962	$24,284	$68,932
Percent Bachelors Degrees	39%	41%	19%	33%
Total Population (2020)	7,915	6,146	3,439	5,992
Biophysical Variables	**Greendale**	**Burncoat**	**Great Brook Valley Area**	**North Lincoln Street**
Percent Tree Canopy Cover (2015)	16%	38%	32%	31%
Percent Impervious Cover	57%	32%	35%	44%
Number of Trees Planted	1,111	885	67	317
Physical Area (sq km)	3.96	4.06	1.12	2.79

*Statistical significance markers: * = p<0.1; ** = p<0.05; *** = p<0.01*

Private Tree Survey Analysis of DCR Trees

HERO fellows take measurements on the first day of field data collection

Biophysical Assessment

Monitor growth and survivorship of trees planted between 2010-2012 by the DCR and Worcester Tree Initiative after the LB outbreak

1. What is the current status of tree health and structure and what factors have the greatest impact on tree health and structure?
2. How does the tree health and structure compare to the past HERO tree survey?

Baseline HERO Survey

Sampling:

Street trees were selected along transects in a randomly selected area

17,000 Total

↓

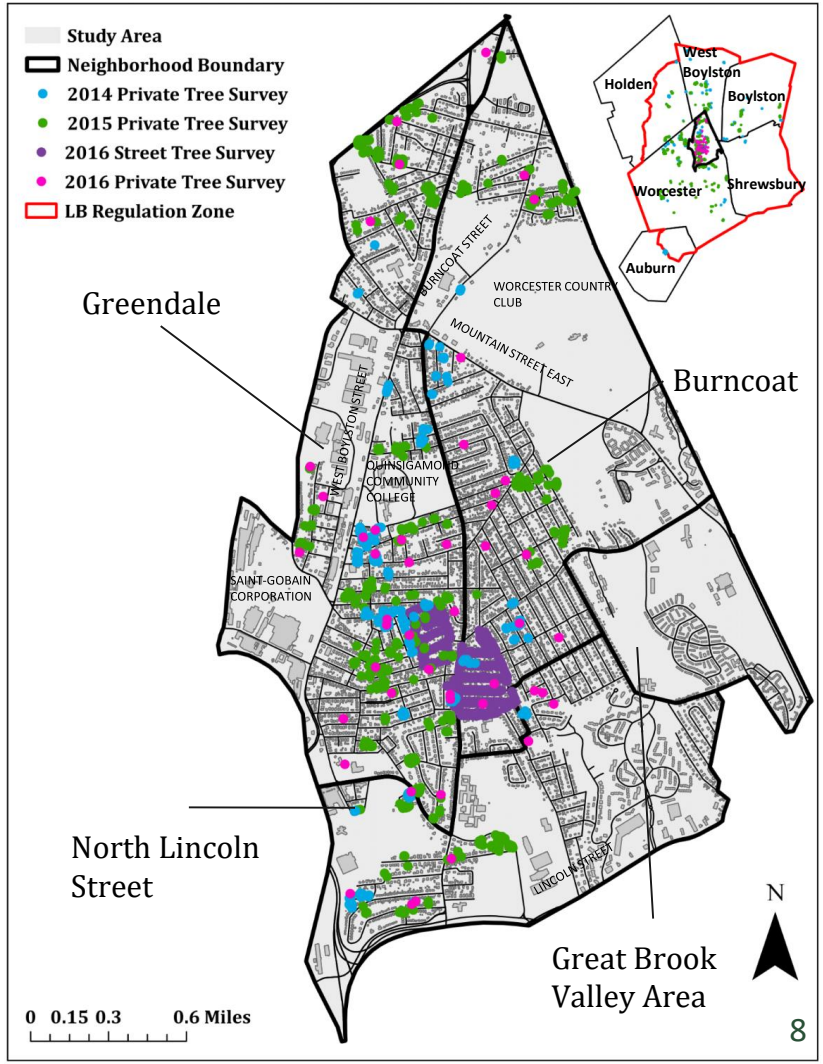
9,000 tree stratified sample by species

↓

1,516 in baseline sample

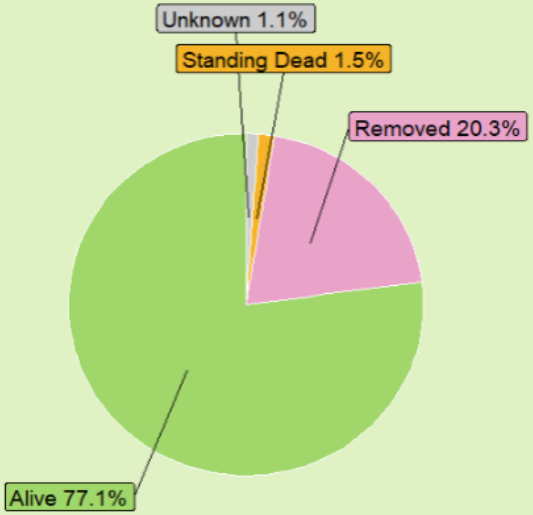
800 private trees surveyed in study area from 2014-2016

- **2014:** 251 Private Trees
  - 81.7% Survivorship
- **2015:** 633 Private Trees
  - 74.7% Survivorship
- **2016:** 47 Private Trees, 413 Street Trees
  - 100% Survivorship of Private Trees
  - 98.1% Survivorship of Street Trees

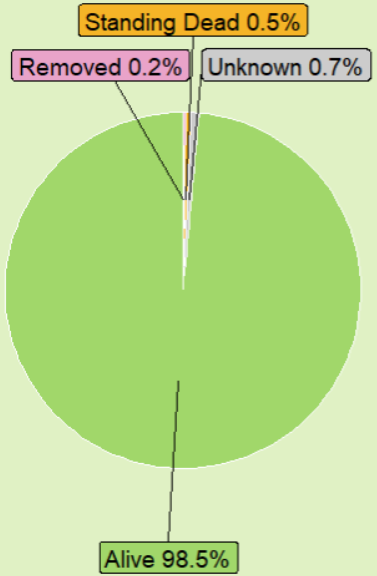


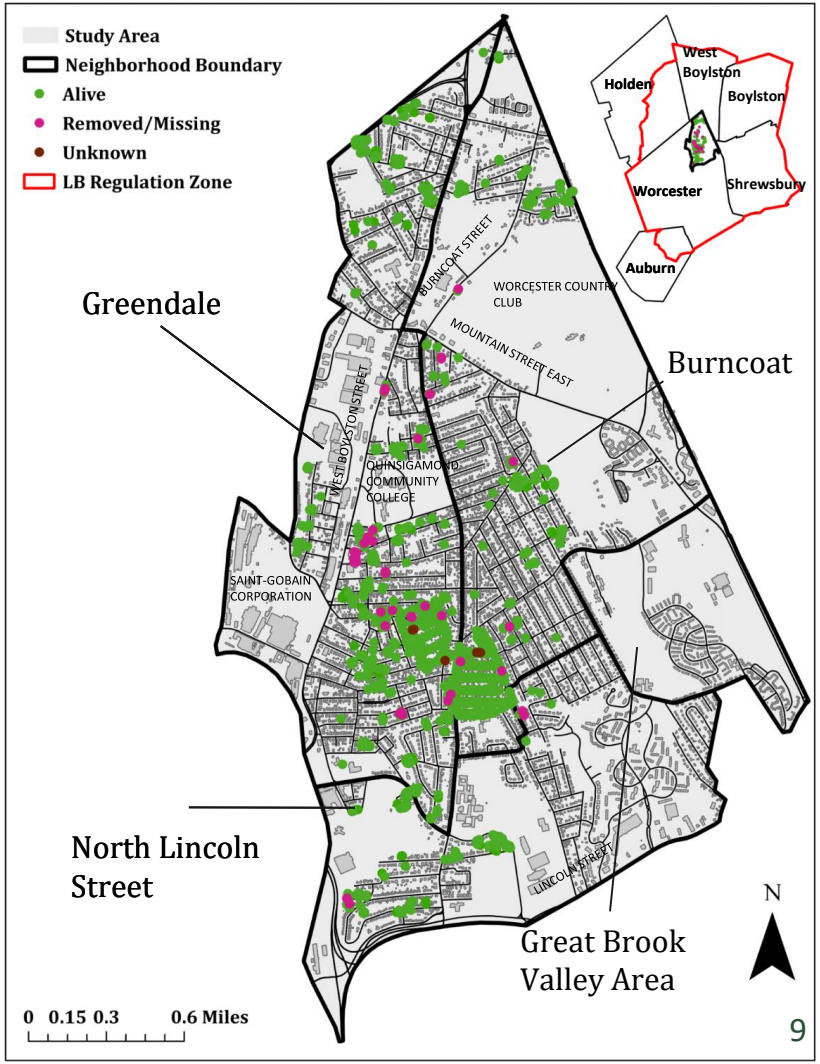
Baseline HERO Survey Findings

Private Tree Survivorship



Street Tree Survivorship

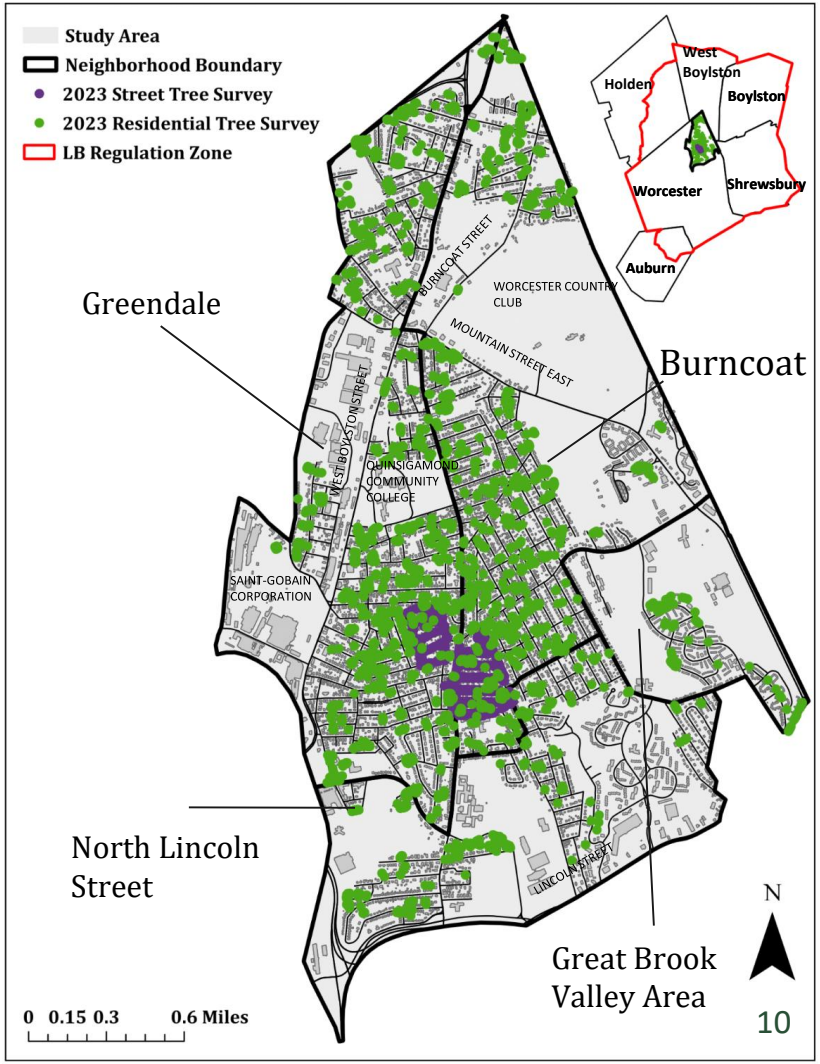




2023 HERO Survey

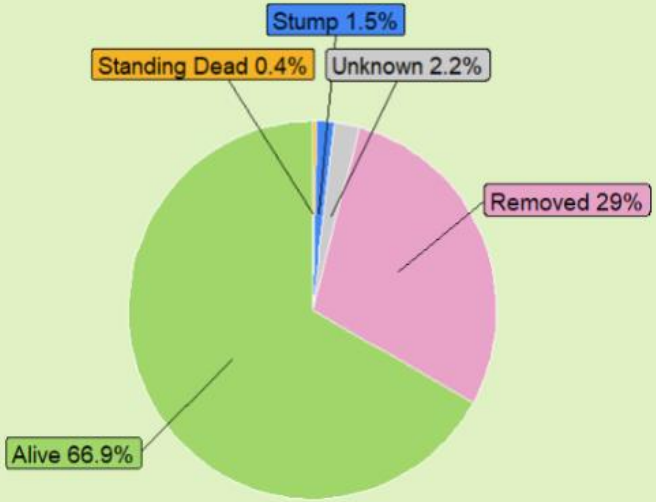
Trees Surveyed in Study Area

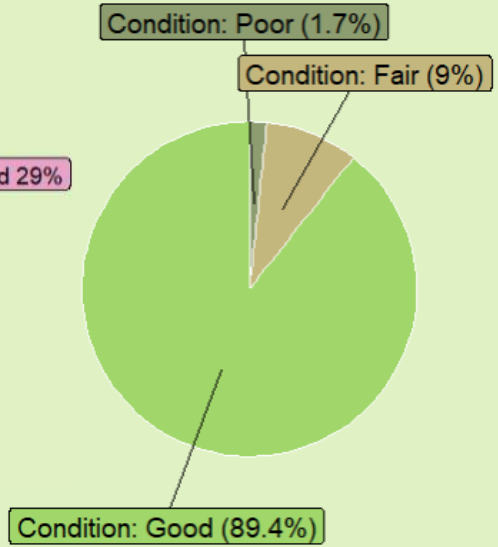
- **2,794 total trees surveyed:**
  - **2,381 Residential Trees** Representing all of the trees from the species stratified random sample in the study area
  - **413 Street Trees** comprising the 2016 sample of street trees along transects planted by the WTI

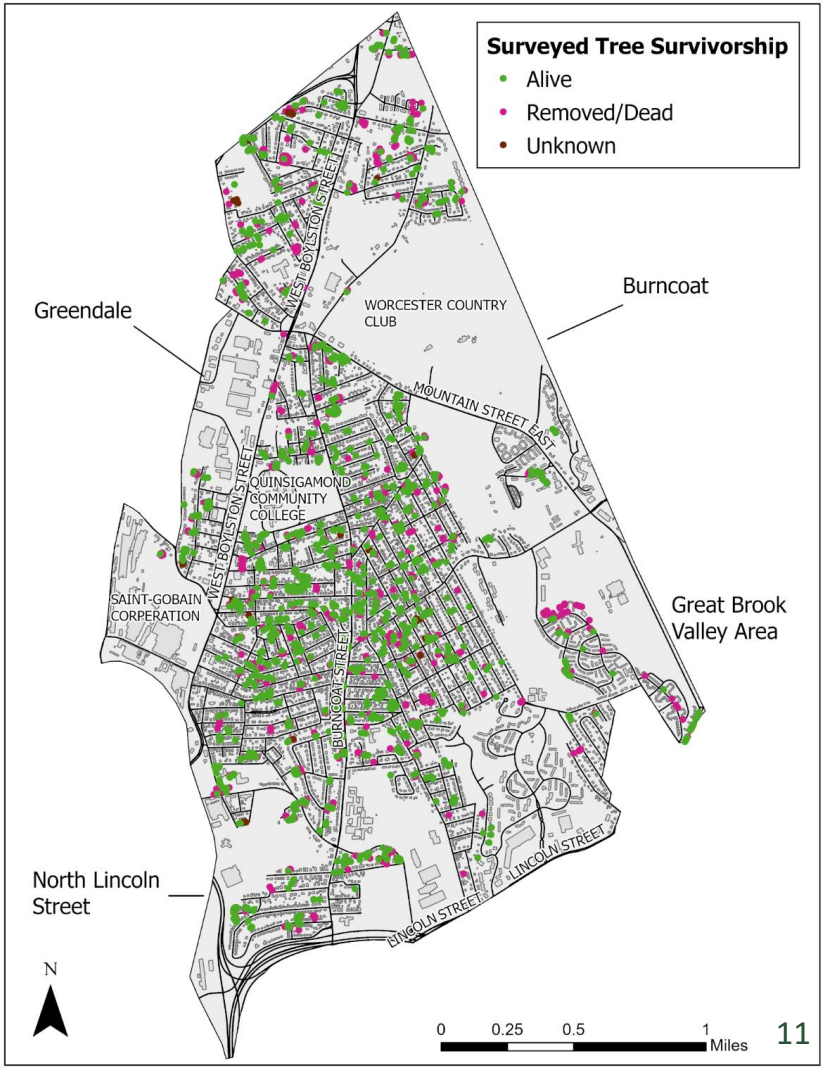


2023 Survey of Private Trees

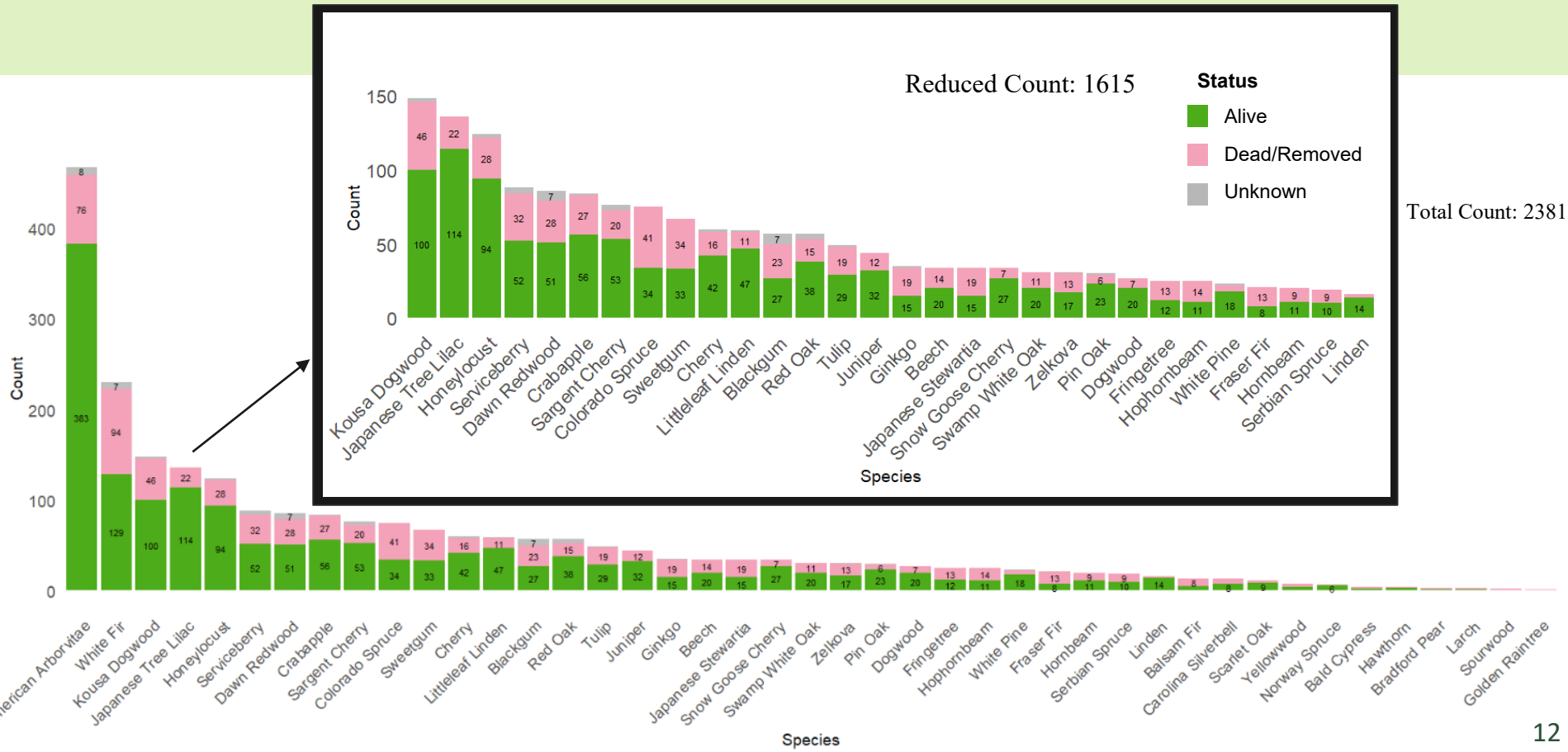
Survivorship







Private Tree Species' Status by Count



2023 Survivorship

Above: Japanese tree lilac (Syringa reticulata) in a front yard

Top 7 species	Survivorship	N surveyed
Linden	88%	16
Japanese Tree Lilac	84%	136
Littleleaf Linden	80%	59
Snow Goose Cherry	79%	34
White Pine	78%	23
Pin Oak	77%	30
Honeylocust	76%	124

n=1615

Right: White pine (Pinus strobus) in a backyard

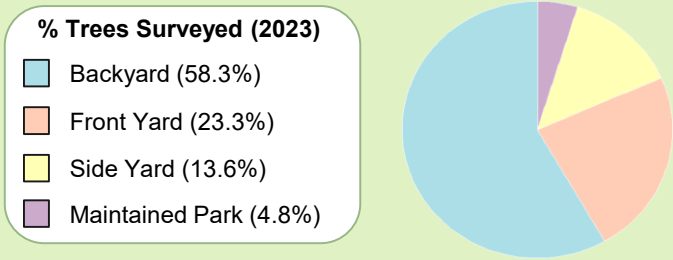
Bottom 7 species	Survivorship	N surveyed
Fraser Fir	38%	21
Ginkgo	43%	35
Japanese Stewartia	44%	24
Hophornbeam	44%	44
Colorado Spruce	45%	75
Blackgum	47%	57
Fringetree	48%	25

n=1615

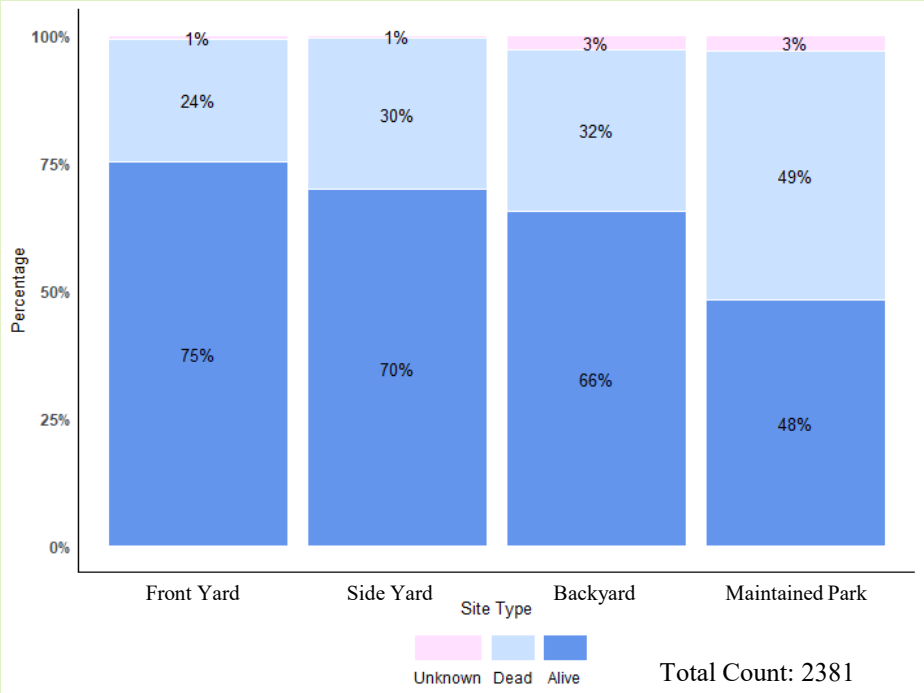
Left: Colorado spruce (Picea pungens) in a front yard

Below: Ginkgo (Ginkgo biloba) in a backyard

Health By Site Type

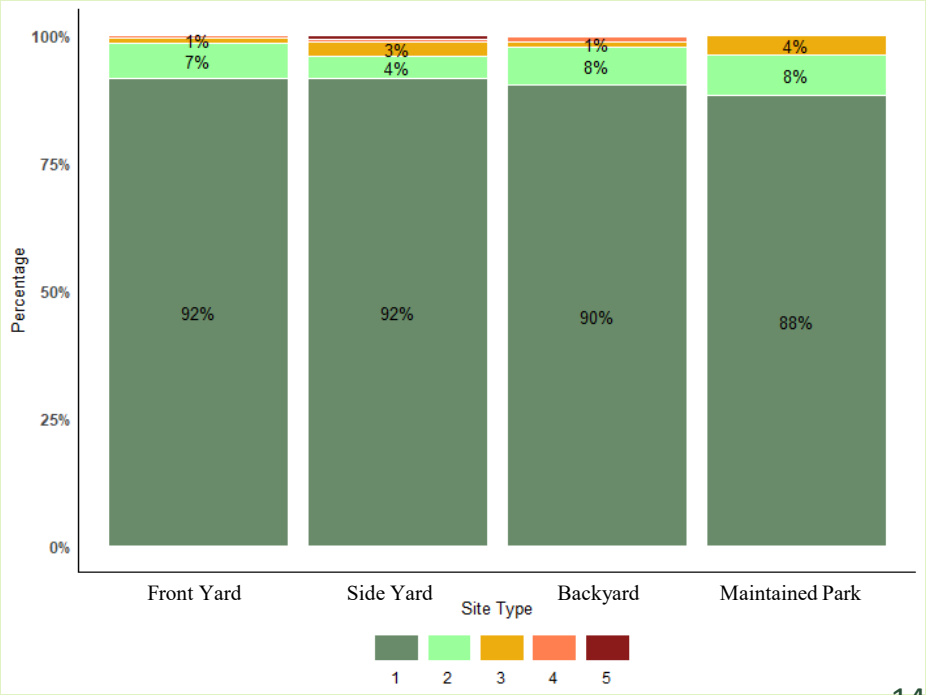


Survivorship

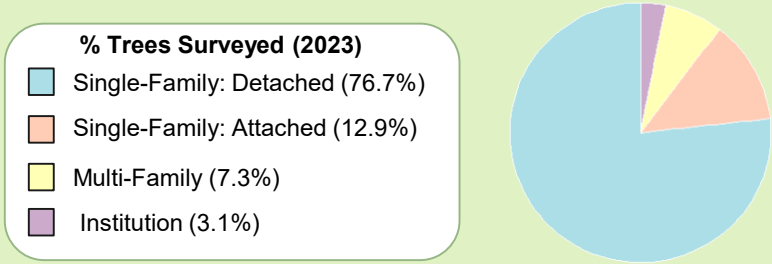


Total Count: 2381

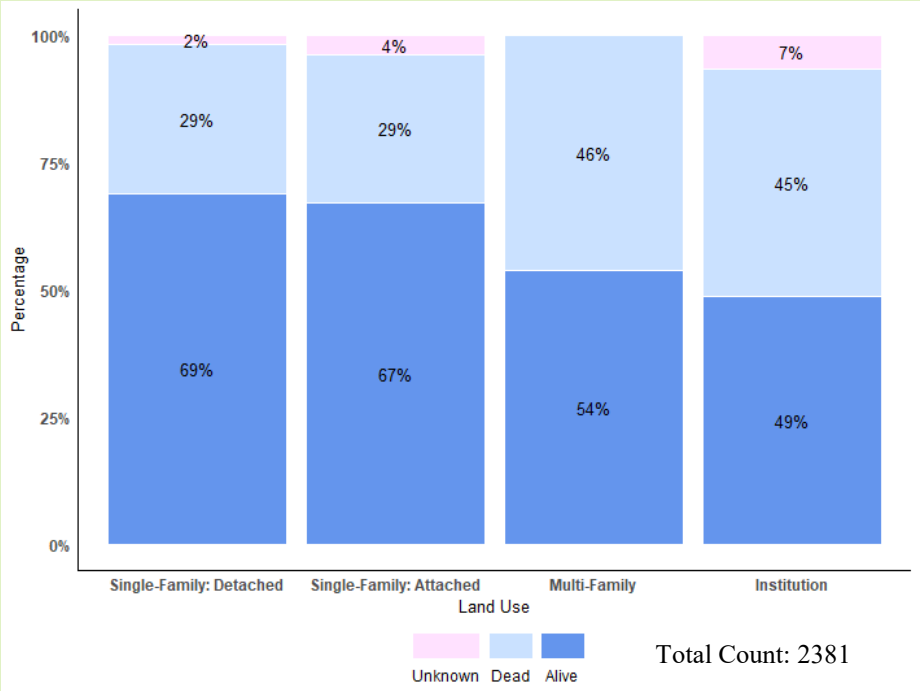
Vigor



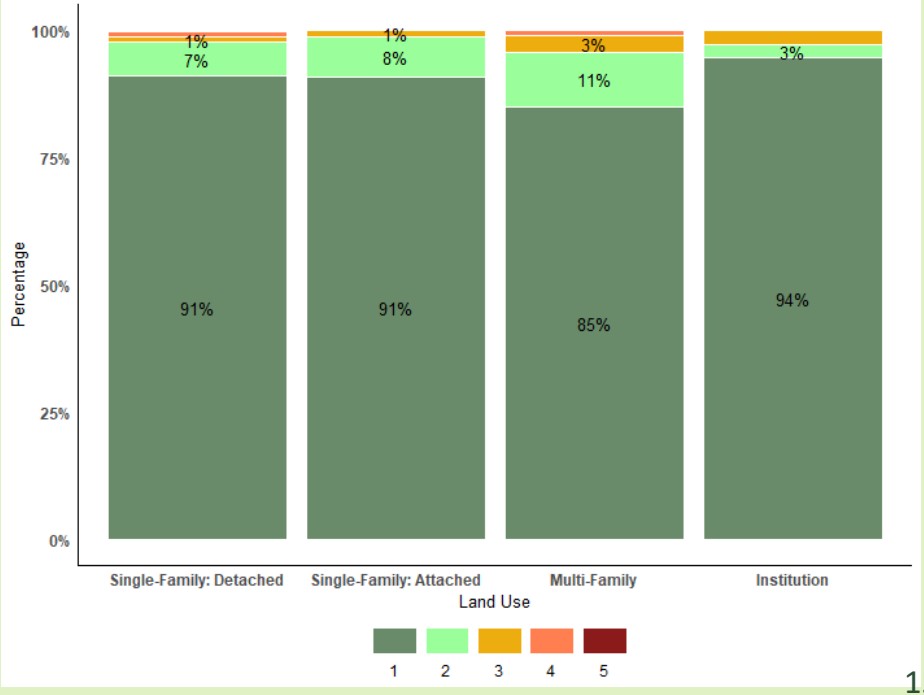
Health By Land Use



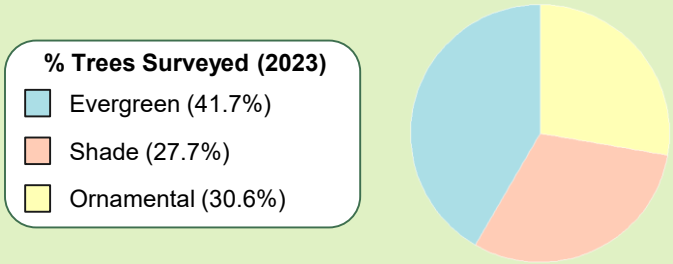
Survivorship



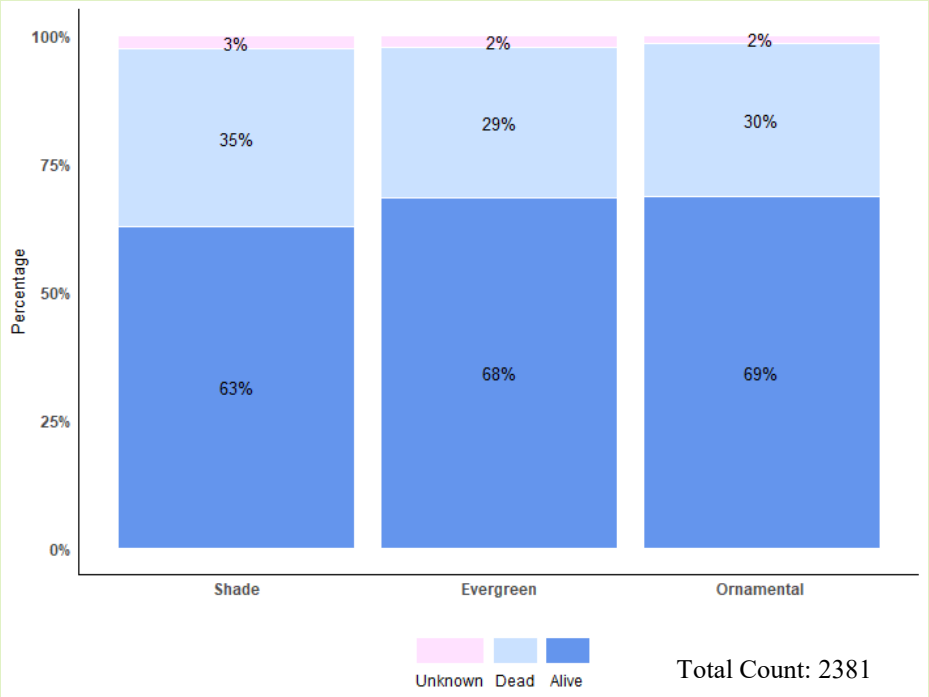
Vigor



Health By Tree Type



Survivorship



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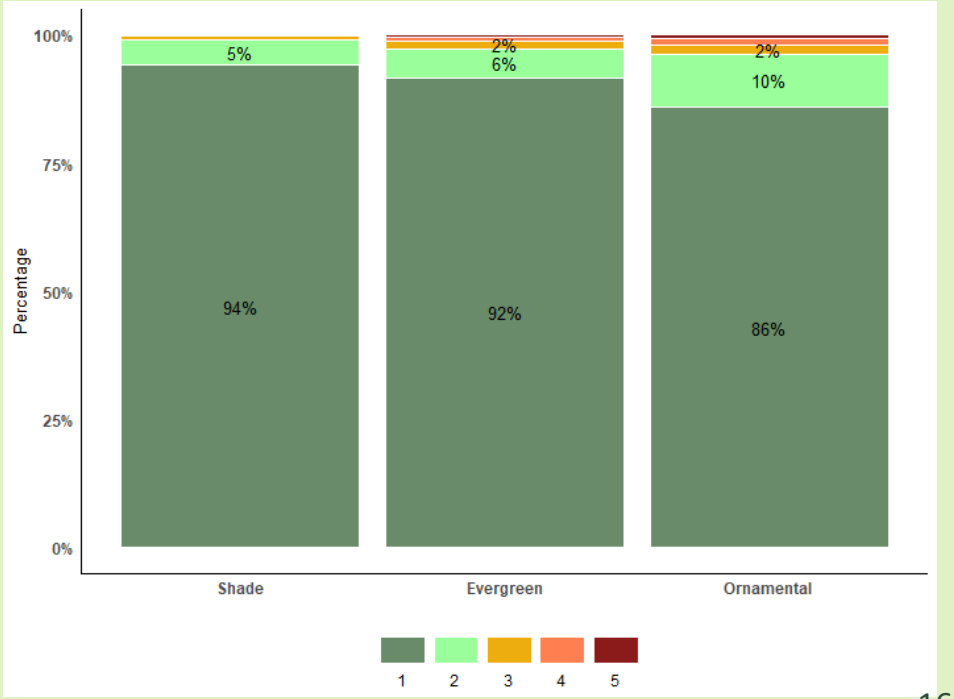
Vigor



Change in Average Tree Height and DBH

Red oak (Quercus rubra) in a front yard

Top 5 height growth species	Avg Height (ft)	Growth from baseline
Tulip	35.7	18.9
Red Oak	29.0	16.8
Littleleaf Linden	29.7	16.5
Honeylocust	28.6	12.3
Dawn Redwood	24.6	11.1

Top 5 DBH growth species	Avg DBH (in)	Growth from baseline
Snow Goose Cherry	12.6	10.4
Tulip	10.5	9.3
Cherry	9.2	7.7
Sargent Cherry	8.8	7.6
Littleleaf Linden	8.4	7.4

Bottom 5 height growth species	Avg Height (ft)	Growth from baseline
White Pine	11.9	1.73
Kousa Dogwood	13.3	3.5
Cherry	16.5	3.6
Serviceberry	14.3	4.8
Japanese Tree Lilac	17.4	5.4

Bottom 5 DBH growth species	Avg DBH (in)	Growth from Baseline
Serviceberry	2.8	2.1
American Arborvitae	3.4	2.7
Kousa Dogwood	3.7	2.9
Crabapple	4.2	3.6
Juniper	4.3	3.7

Snow goose cherry (prunus serrulata 'snow goose') in a backyard

Summary of Private Tree Analysis

Rate of annual survivorship has increased since the HERO baseline survey for the majority of species surveyed

Standout Species:

- **Japanese tree lilac, Linden/Littleleaf linden,** and **Snow goose cherry** had the highest survivorship rates
- **Tulip** trees had the **largest increase** in height, crown width, and second largest increase in DBH
- **Snow goose cherry** had the largest change in DBH

Analysis Based on Factors:

- **Front and side yard trees** have the **highest survivorship** for site type
- **Single-family residences** have the **highest survivorship** of any land use type
- **Shade trees** have **lowest survivorship, but highest vigo**r
- **Native trees** do better in both **vigor** and **survivorship**

Littleleaf linden (Tilia cordata), one of the fastest growing trees in our survey, in a backyard

Street Tree Survey Analysis

Biophysical Assessment

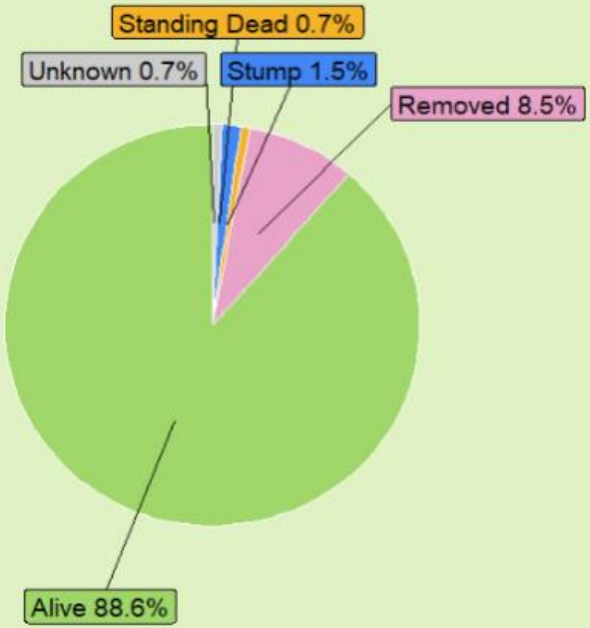
Monitor growth and survivorship of trees planted between 2010-2012 by the Worcester Tree Initiative after the LB outbreak

1. Compare street tree survivorship and growth to private trees
2. Analyze changes in survivorship over time

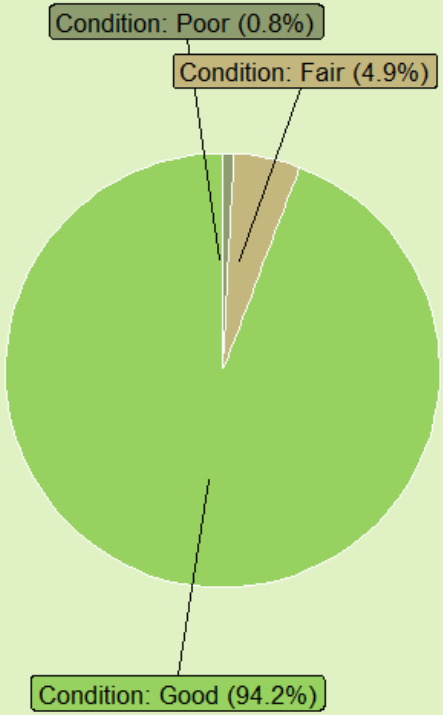
Tanner and Ksenia, next to our tallest street tree, a tulip tree (Liriodendron tulipifera), measuring 49.6 ft

2023 Worcester Tree Initiative Street Tree Survey

Survivorship

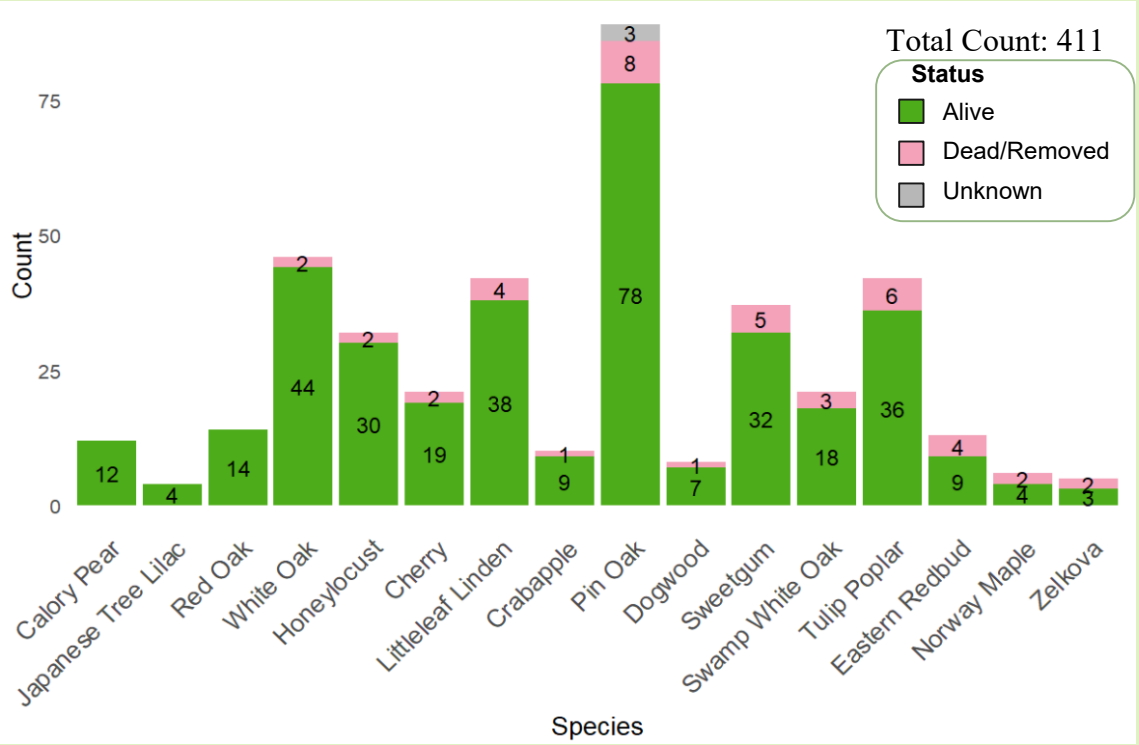


Condition



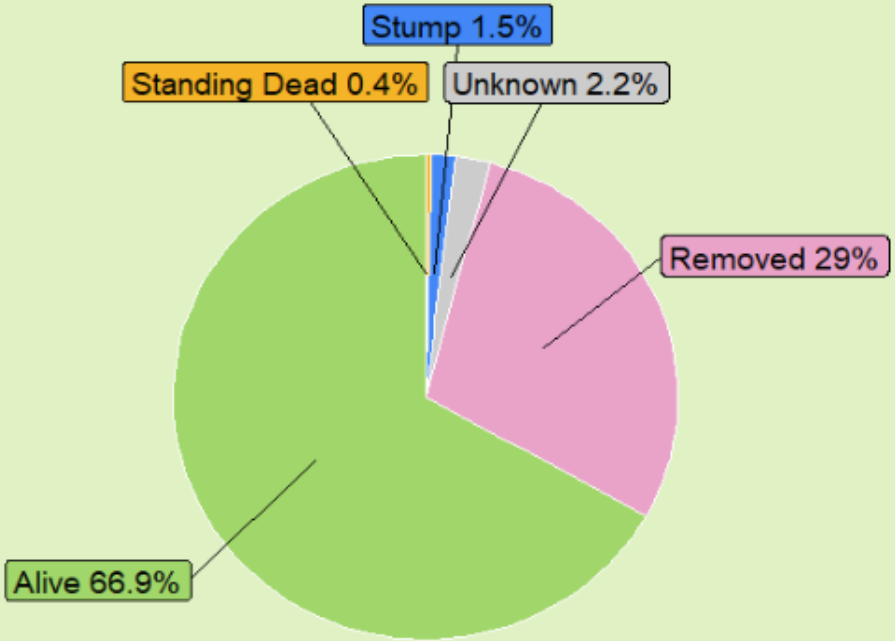
Street Tree Survivorship by Species

Showing species with four or more trees planted

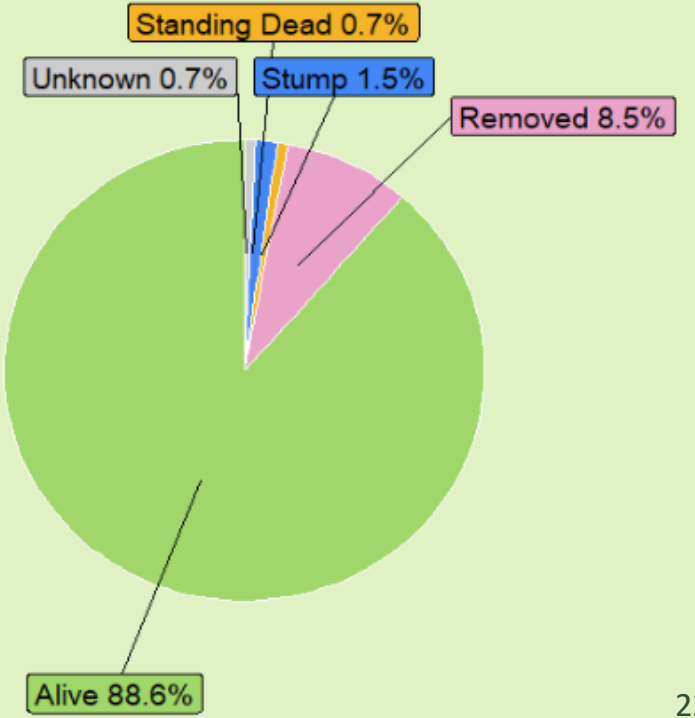


Private Trees Compared to Street Trees: Survivorship

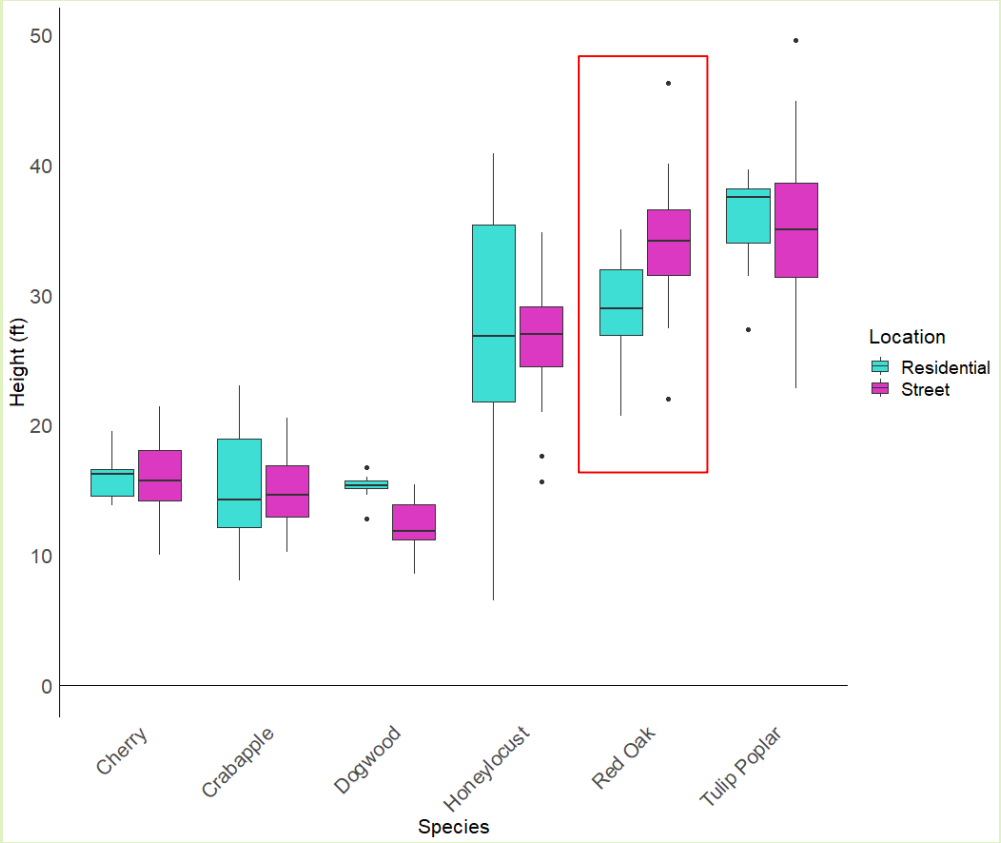
Private Trees



Street Trees



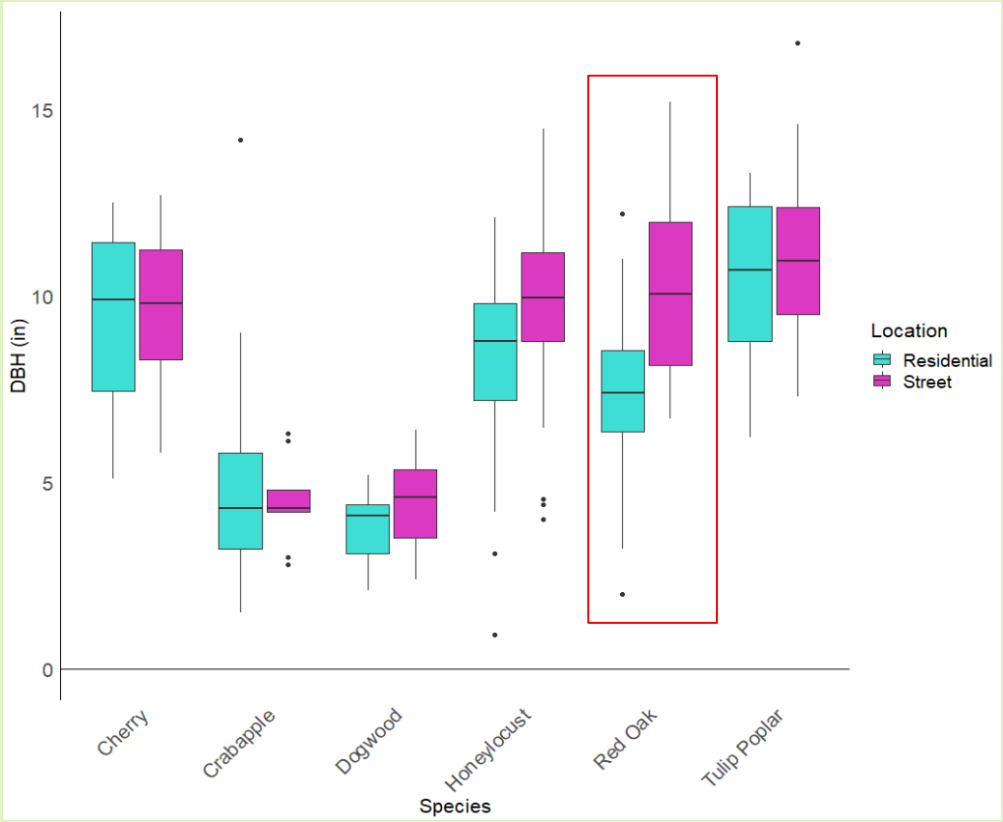
Private Trees Compared to Street Trees: Height



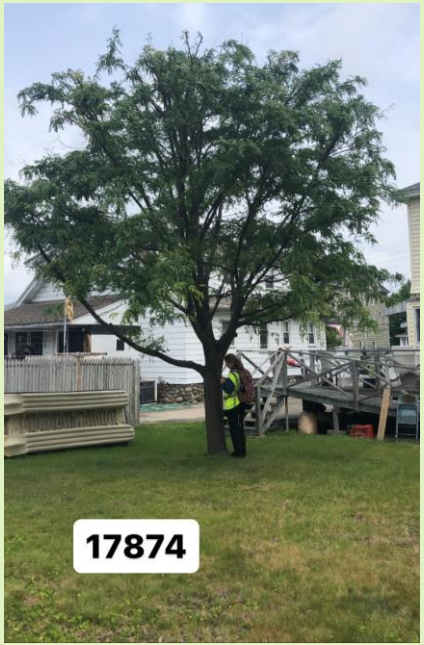
Red Oak Residential and Street

A Red Oak (Quercus rubra) planted in the shade on a private property (pictured left) and next to the street (pictured right)

Private Trees Compared to Street Trees: DBH



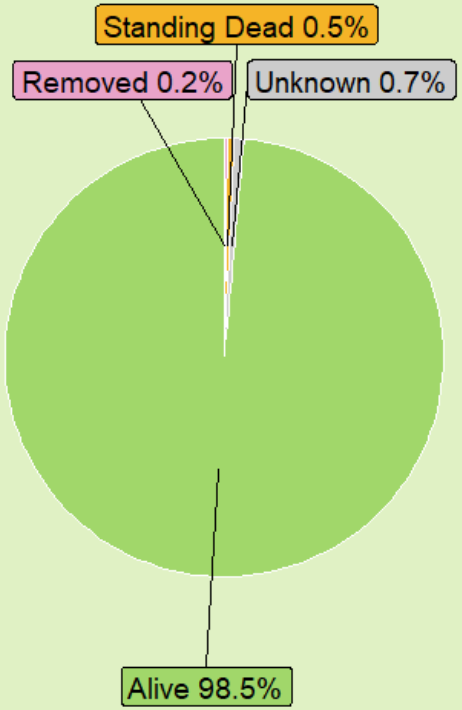
Honeylocust Residential and Street



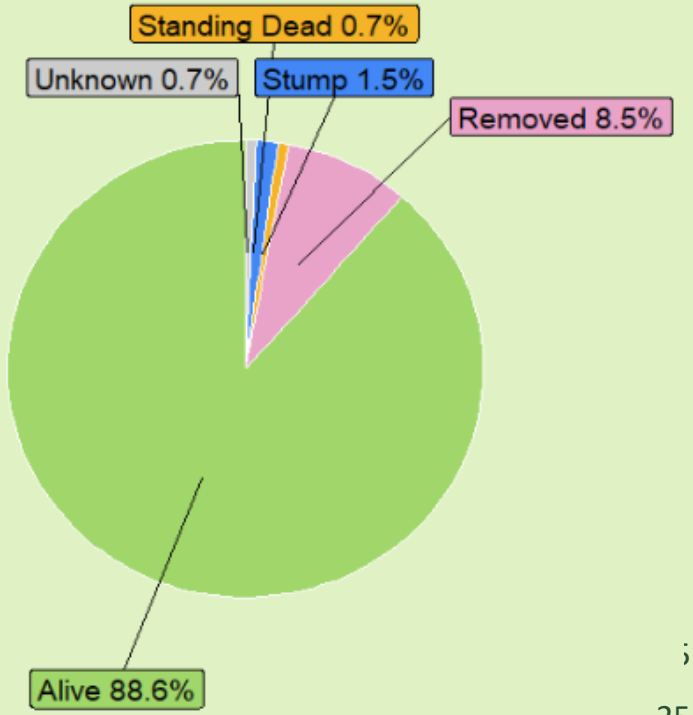
A Honeylocust (Gleditsia triacanthos) on a private property (pictured left) and next to the street (pictured right)

Change of Street Tree Survivorship over Time

Baseline



2023



Summary of Street Tree Analysis

Major takeaways

- Street trees have very **high survivorship** both in the baseline and 2023 surveys and a **higher survivorship** than private trees.
    - Regular watering by WTI Young Adult Foresters Program
    - Fewer tree removals because street trees don't compete with yard amenities ie. pools, decks, sheds
- **Less species diversity** of street trees compared to private trees but **high proportion of shade trees**
- **Red oaks** had larger height and DBH compared to private trees.

Honey Locust (Gleditsia triacanthos)

Interview Analysis

Adlai, Aaron, and Professor Martin interview a resident

Social Assessment

Interview neighborhood residents in the study area to understand their perceptions of trees and post-LB tree planting initiatives

1. How do residents perceive the role of trees & DCR's tree planting initiative on their property and in their neighborhood?
2. How do residents' past experiences and beliefs impact tree stewardship?

Resident Survey

Residents Contacted

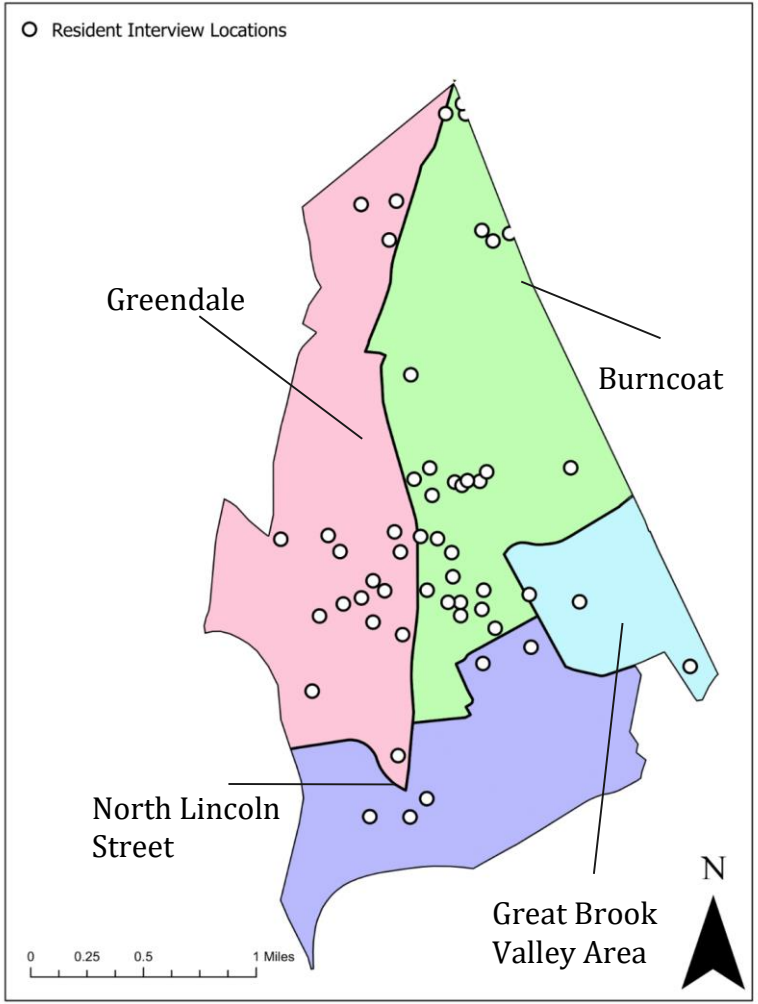
- 582 residents called
  - 40 interviews scheduled
- 12 additional interviews conducted based on interactions during data collection

52 Interviews Conducted

- 27 in Burncoat
- 17 in Greendale
- 5 in North Lincoln Street
- 3 in Great Brook Valley Area

Planted Trees Associated with Interviews

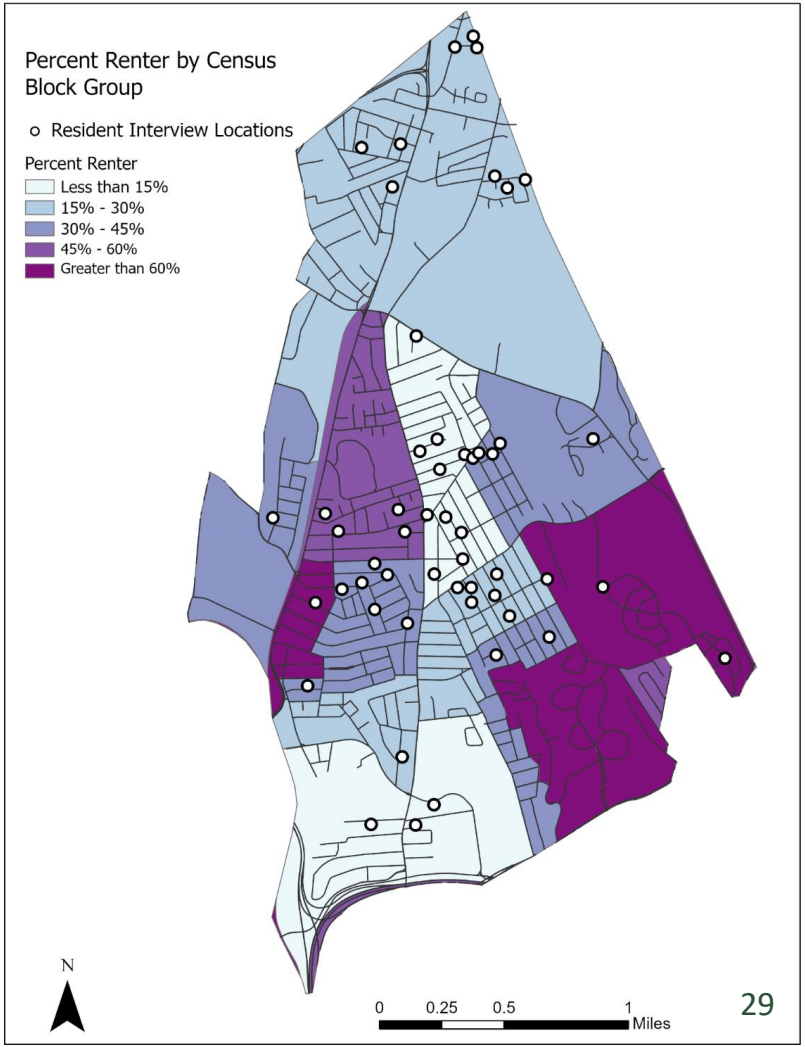
- 233 trees
- Average of 6 trees per property
- Average survivorship was 77%



Interviewee Demographic

Demographic Variables	Worcester	Study Area	Interviewees
Percent English Limited	12.10%	9.1%	5.6%
Percent White	48%	56%	92%
Percent Renter	59%	47%	2%
Median Household Income	$61,106	$72,243	>$75,000
Percent Bachelors Degrees	31%	36%	71%
Population	206,518	23,492	52
Average Age	34.6	37.5	65+

Male to female ratio: 53% female
Average years lived in home: 26 years



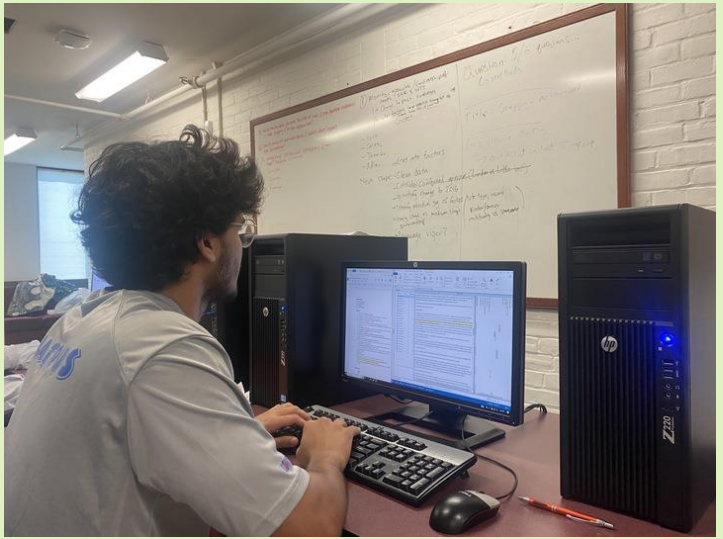
Methods

Interview Categories

1. Background: Personal History & Experience with DCR
2. Tree Stewardship
3. Perception of Trees
4. Perception of Neighborhood
5. Environmental Concerns

Procedure

- Conduct 20-40 minute interviews
- Transcribe interviews manually and using AI
- Code interview transcripts using the Nvivo software
- Assign attributes to understand impact of demographics
- Assess emerging themes based on fully coded interview dataset to answer research questions



Ramón uses Nvivo software to code interviews

Perceptions of Tree Benefits

What are benefits of having trees on your property?

"It throws beautiful **shade for my tenant**"

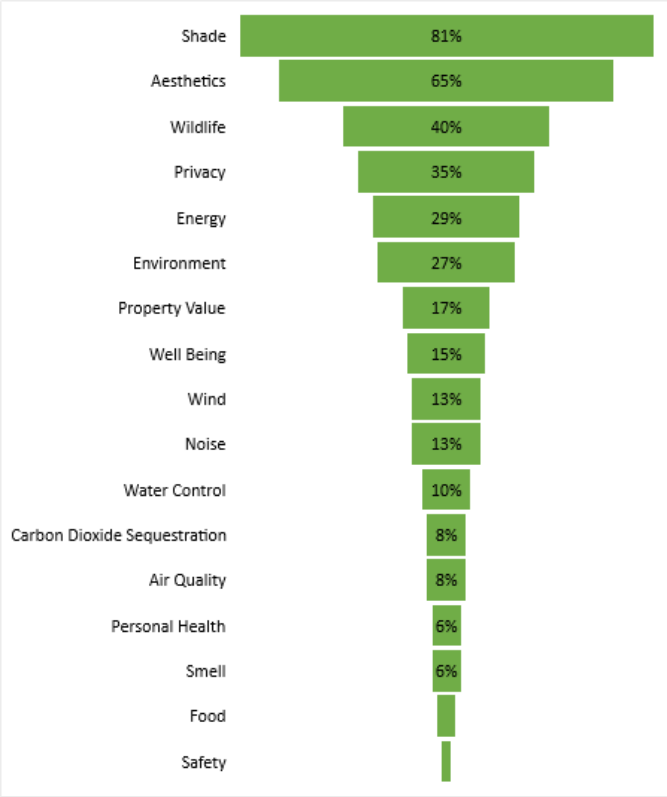
"I just find trees **beautiful**"

"**I like the birds** and the birds like the trees"

"**I want a live fence**. So I chose that arborvitae **for the privacy"**

"Every tree is **worth 10 air conditioners**"

"By planting the trees closer to the road, **we get people to slow down"**



Tree Benefits by Scale

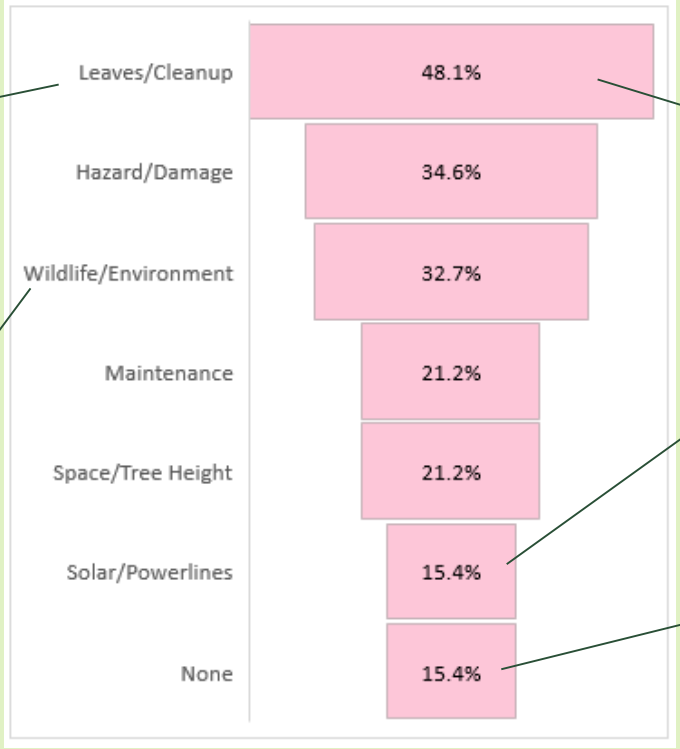
Perceptions of Tree Challenges

What are the challenges of having trees on your property?

"We had two giant trees in the front, that, every **storm** would **drop limbs**, and we'd have to **drag them out of the street.**"

"**Squirrels** can climb up that tree and then **they can get into the gutter**. We've had some birds in the attic in this house"

"That big tree over there is **blocking the sun** and my pool by the time I get out of work every day."



"The challenge is that all of the **leaves** and anything else that sheds from the tree ends up on the cushions of my patio furniture. It's like **you can never keep it clean**."

"This one's starting to become concerning, 'cause **it's kinda half dead** and it's getting **closer to the power lines** and what not."

"**There is no challenge**, because even taking care of a tree is relaxing."

Experience with Tree Removal Policy

Looking back, what do you think about the tree removal policy?

30.8% reported positive perceptions

38.4% reported neutral perceptions

13.5% had negative perceptions

17.3% not present or had no answer

"It's a shame, quite frankly, for that to happen. But **I'm glad they did.**"

"You **had to**. Yeah, I mean, there was **no ifs and buts about it**. It had to be done, or we would have been screwed, you know, **we would have had nothing."**

"I think a lot of it's **experimental**... because you've got something new... there's so much blame going around when in fact people [were] just **doing the best they could with the knowledge they had.**"

"I think it was **overkill and devastating** and had such a **negative impact on the neighborhood** that we moved."

"I think they [contractors] were just **trying to make money**, at the time. And they were just **cutting down trees for no reason.**"

Experience with DCR Planting

Could you tell us about your experience with the DCR and the re-planting process?

46.2% reported positive DCR planting experience

26.9% reported neutral planting experience

17.3% reported negative DCR planting experience

9.6% not present

"Oh, they were they were **very friendly, very knowledgeable**. And they explained, **they gave me the choice** of trees that I could have."

"When that program came through to reforest, that was **very welcomed, very embraced**, you know, they came through and they offered to plant. And... **it felt like someone cared about our little neighborhood** here."

"**They did what they said they were going to do**. They gave us instructions... They were clean. They didn't leave a mess or anything. So, **everything was done well**."

"It was fine. They just came and did it. **A lot of people came in to plant one tree**."

"...there was **really no communication** at all."

Neighborhood Recovery

Does your neighborhood feel similar to before the Longhorned Beetle outbreak?

40.4% say yes, the neighborhood has recovered

38.5% say no, the neighborhood has not recovered

21.1% not present or no answer

“It’s the same, the trees are coming back.”

"As those trees are maturing, **it's starting to get back to that old look."**

“**It hasn't fully recovered from that...** I still have memories of the Norwegian Maples creating this green canopy, you know, over the street, you could... walk through a tunnel of green... **It's still a little bit bare compared to my memory of it as a kid** growing up in this neighborhood.”

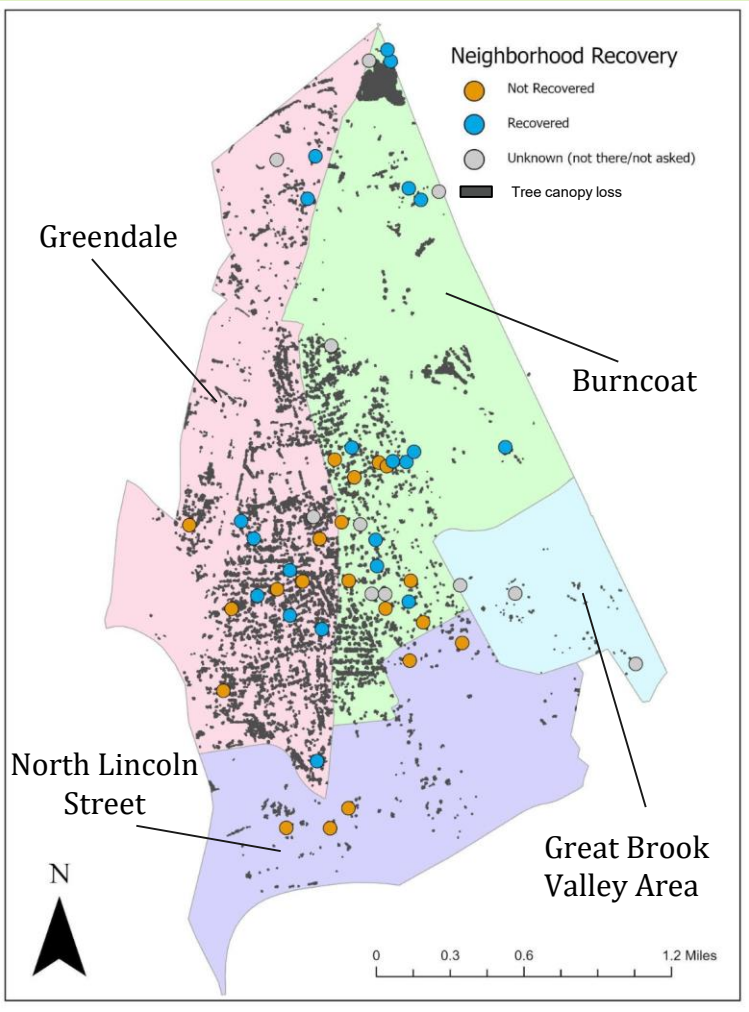
“No, no, **definitely not.** Like I said, the canopy that we had with all the trees was, I mean, something out of a Robert Frost poem or something out of storybook. Yeah. **It'll never be the same.”**

Neighborhood Recovery

Overall Residents impressions of tree recovery vary dramatically street by street and property by property.

40.4% Residents who said the neighborhood had recovered are towards the north of the study area/sub-urban areas

38.5% Residents who said the neighborhood had not recovered are concentrated in areas with the most tree loss



Tree Stewardship

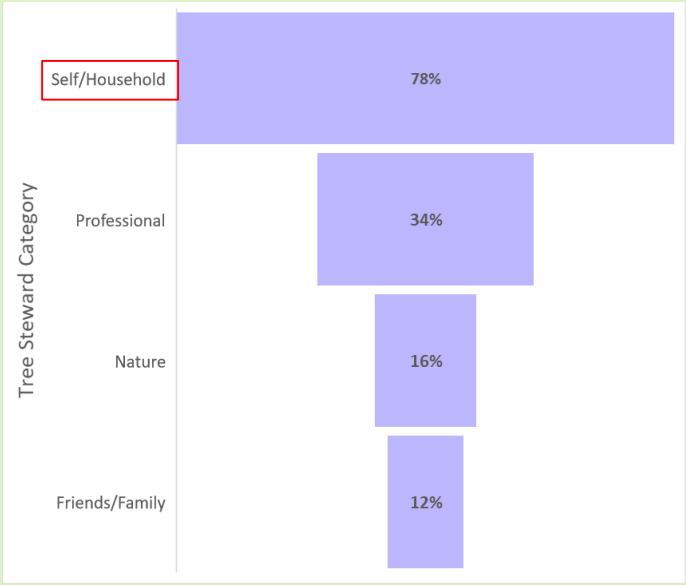
Who maintains the trees on your property, if anyone?

"**I used to do the maintenance**, like landscaping, for a two family property. **But now I've had somebody come**..."

"They had some **watering bags** that we **faithfully maintained**. Once those came down, then we let **nature run its course** for the most part."

Tree Steward	Interviewees (n)	Trees (n)	Average Survivorship
Self/Household	39	149	82%
Nature	7	23	77%
Professional	17	93	71%
Friends/Family	6	13	70%

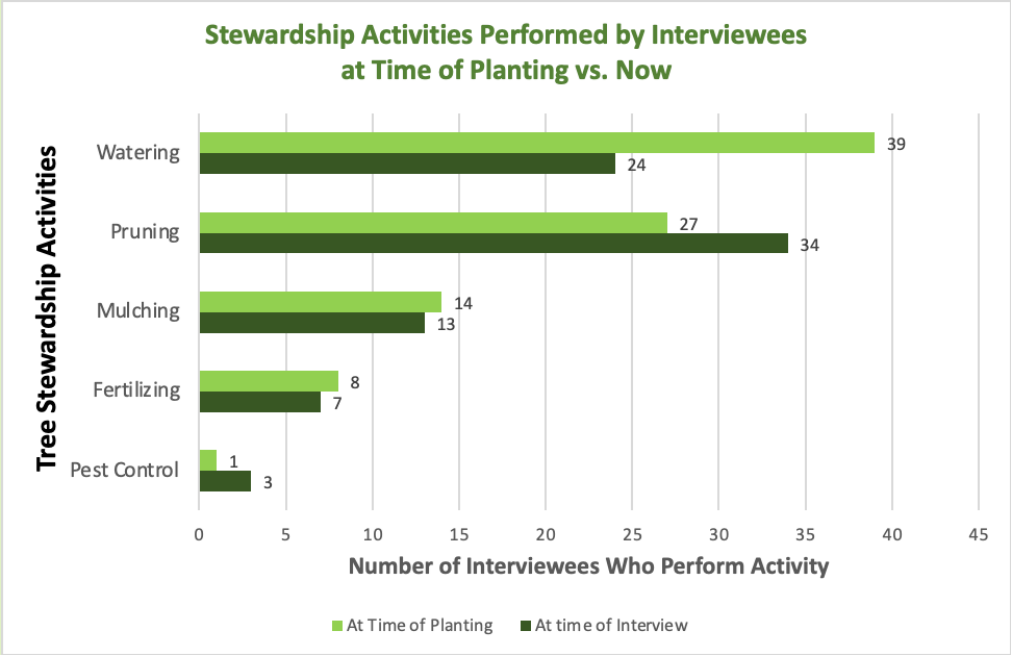
Who is stewarding trees



Stewardship Activities

What are the ways your trees are taken care of? *(prompts: watering, pruning, mulching)*

- Many interviewees **diligently watered** their trees the **first few years**, and gradually **stopped** as they said their tree **"took."**
- **Pruning is more frequent as the tree grows** and encroaches near property, power lines, neighbors' yards, etc.
- **Mixed views about** whether **mulching** is good for the tree or not.
- Many interviewees told us they "**just did what they [the DCR] told us to do.**"

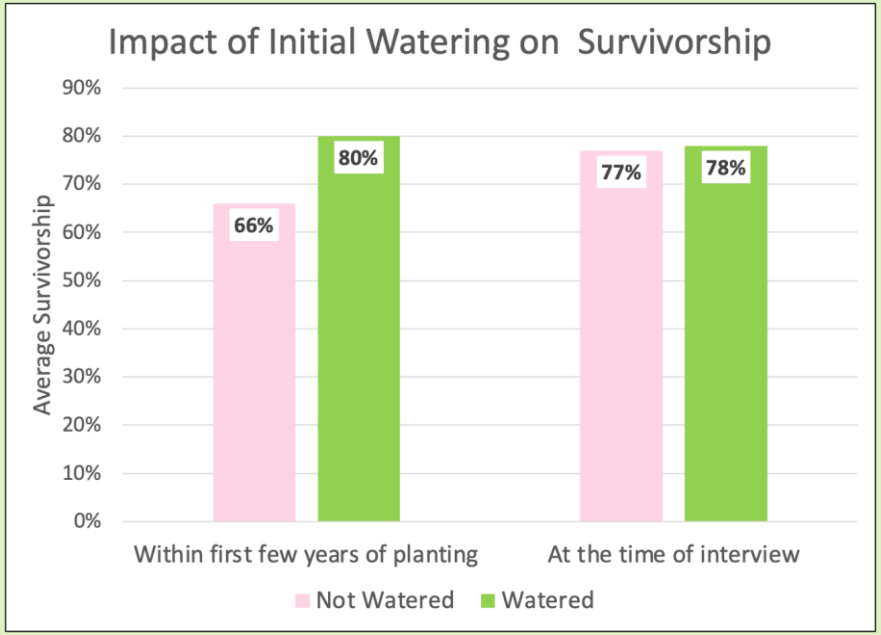


The Difference Initial Watering Makes

How has the maintenance of your trees changed over the last 10 years?

- Trees watered in initial 1-2 years of planting have much higher survivorship
- Watering more mature trees is not associated with higher average survivorship

"Yup, about **twice a day**. Once in the morning and once the evening, that was it. That's what they told me to do. [Now,] I just prune, that's it I **don't [do] any watering**.I **let mother nature** do that, that's all."



Past Experience and Stewardship

DCR Planting Experience	Average Trees Planted on Property	Average Survivorship	Interviewees (n)
Not Present	4.75	41%	5
Negative	5	66%	9
Neutral	3.29	85%	14
Positive	7.79	82%	24

- Change in homeownership is associated with tree removal and lower average survivorship
- People with mixed or neutral opinions had the highest average survivorship
- On average, people with a positive experience with the DCR had more trees on their property and high survivorship

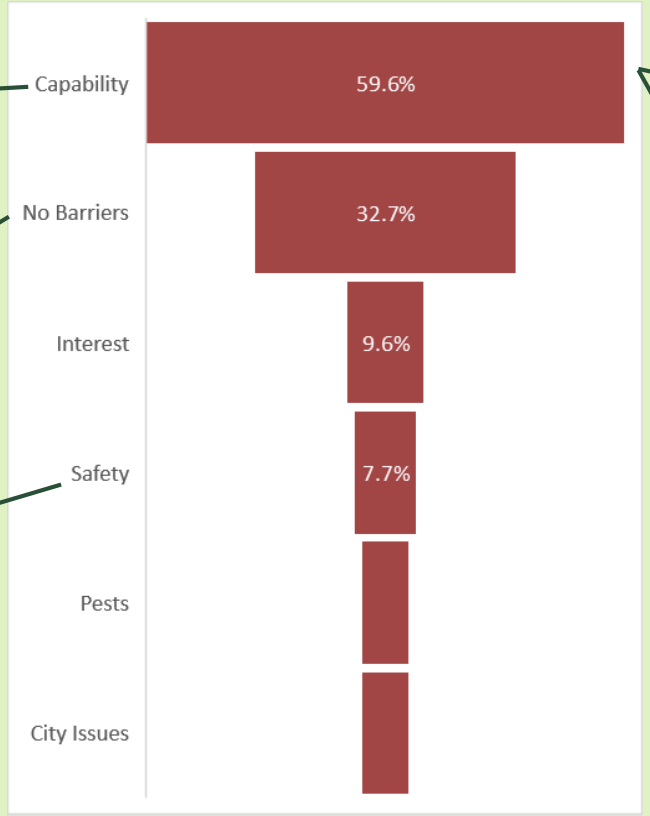
Common Barriers to Tree Stewardship

What difficulties have you encountered caring for your tree(s)?

"**Raking the leaves** was often a challenge"

"**I don't care**. You know, so, so like I said, **a labor of love**"

"We felt like the tree **might hit us**"



"**I'm disabled now**, unfortunately. And the **maintenance is harder**"

"**Definitely money**. It costs money to do it"

Summary of Interview Analysis

Major takeaways

- Residents value **shade, beauty/aesthetics, wildlife,** and **privacy** but face challenges such as **leaves/cleanup, hazards, effects of wildlife**
- Residents find **capacity** to be a major barrier to tree care
- Interviewees in the **north/suburban sections** of the study area were more likely to say their neighborhood had **recovered**
- Residents who believe that their neighborhood had **not recovered** tend to live in areas that experienced heavy **tree loss from LB**
- Stewardship:
    - Residents who tended to **water** their trees more in the **initial stages** had **higher average tree survivorship**
    - **Lower average tree survivorship associated with**
        - New homeownership
        - Negative opinions of DCR planting experience

Amritha and Ksenia conducting an interview on resident's lawn

Ksenia and Caleb conducting an interview

Tree Planting Outcomes and Conclusions

HERO fellows, Ksenia and Tanner, assessing crabapple (Malus coronaria)

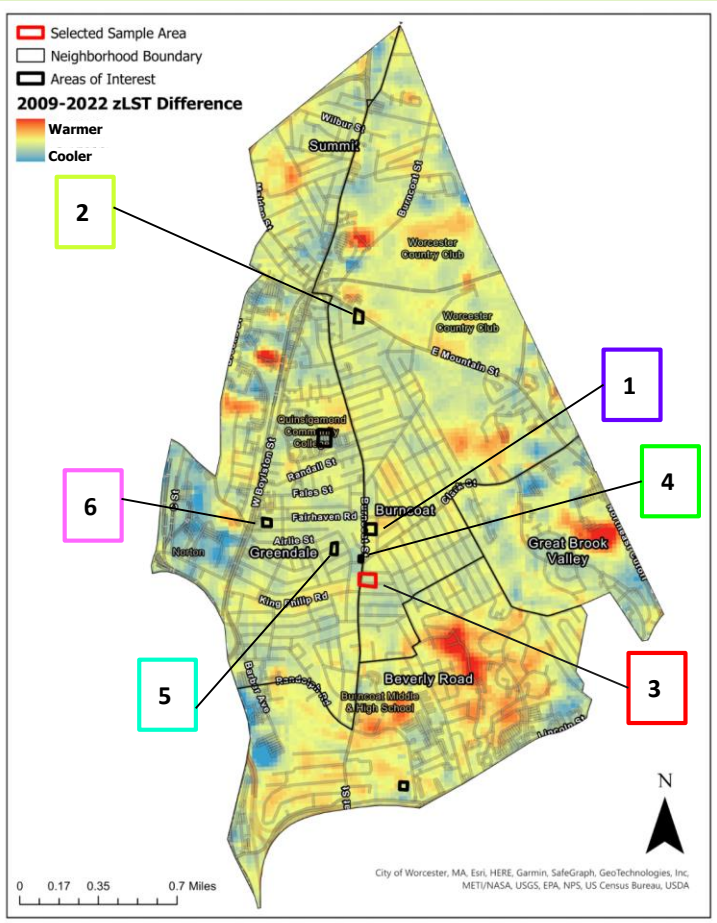
Outcomes

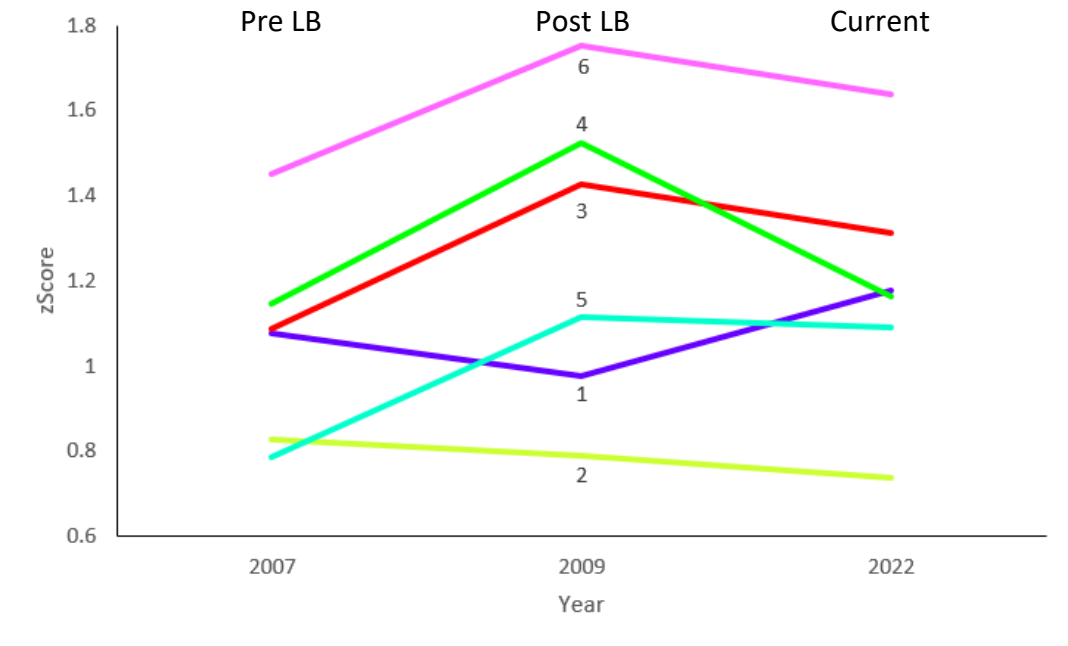
What are the impacts of tree planting on temperature?

Conclusions

1. Lessons from Our Study
2. Recommendations for Tree Planting
3. Future Research

Tree Planting Impact on Surface Temperature

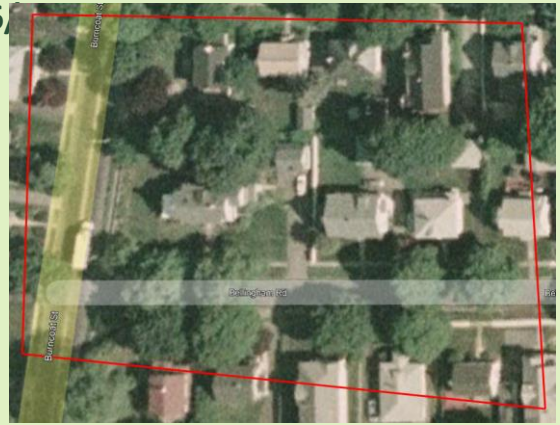




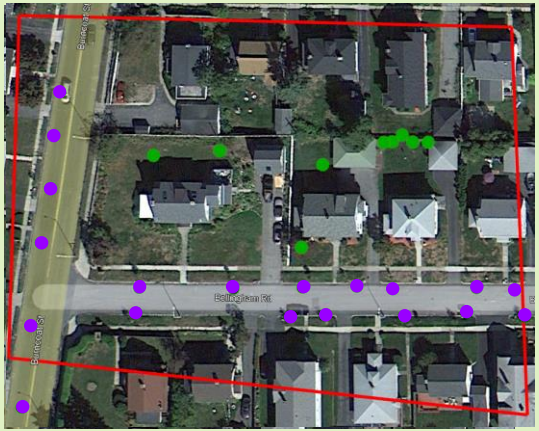
Residential areas with lots of removals get sharply warmer from 2007-2009, slowly cool following replanting

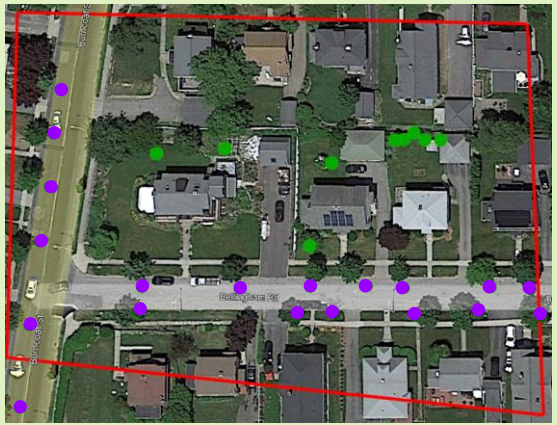
Satellite Images of Selected Sample Area 3

7/2007 Pre-LB



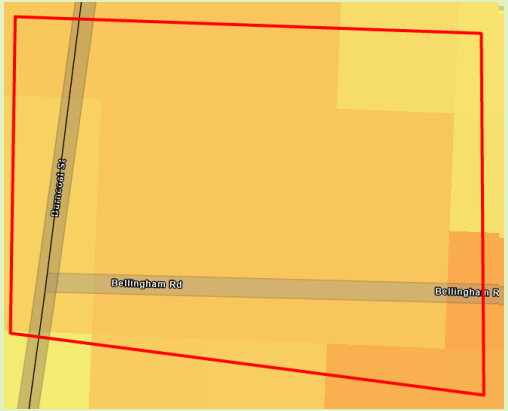
9/2010 - During Planting

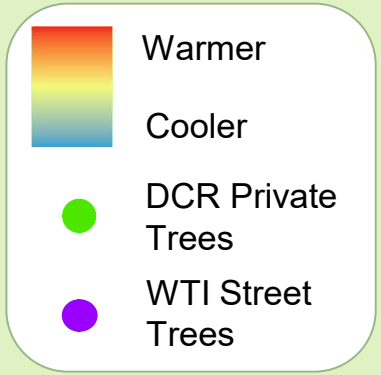




Land Surface Temperature (zLST) Difference

Between 2007 - 2009





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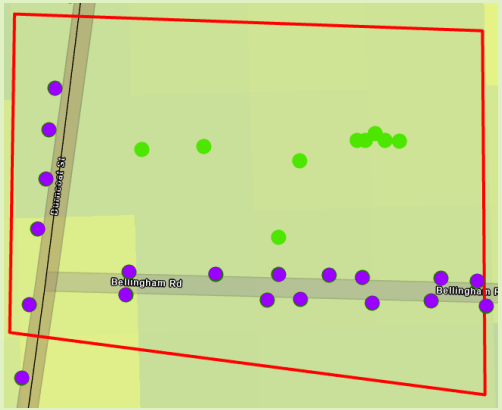

Lessons from Our Study

- **Linden**, **littleleaf linden**, and **honeylocust** have the **highest survivorships** of private shade trees
- **Japanese tree lilac** and **snow goose cherry** have the **highest survivorships** of private ornamental trees
- **Troubling** results were seen with **gingko** survivorship
- **Street trees** have **higher survivorship** than private trees
    - 66.9% private tree survivorship, 10.2% less than baseline
    - 88.6% street tree survivorship, 9.9% less than baseline
- **Residents** perceived that the **largest benefit** from trees was **shade**, despite **shade trees** having **lower survivorship** than evergreen and ornamental trees
    - Shade trees provide the most ecosystem services as quantified by iTree
    - Residents want shade trees, but not on their property

Ksenia measures the DBH of a Pin Oak (Quercus Palustris)

Recommendations for Tree Planting

Tree Species Selection
- Shade and ornamental (see list)

Site Selection
- Front yards of single family homes/duplexes have highest survivorship and vigor
- Extra coordination and stewardship needed in multi-family residence properties

Communication
- Enhanced and sustained communication with residents is required to ensure tree survivorship
- Tree retention contract required when planting a tree in private yard

Long Term Monitoring
- Ongoing health assessments can promote intervention

Coordinated watering
- Private and Street trees

Shade Species
Littleleaf linden
Tulip
Pin oak
Honeylocust
Red oak

Ornamental Species
Snow goose cherry
Japanese tree lilac
Dogwood
Dawn redwood

Ksenia and Tanner measure a tulip (Liriodendron tulipifera)

Future Research

- Expand analysis to full LB regulation zone
- How can the likelihood of future removals of healthy trees be reduced?
- How do private tree survivorship factors change in the short and medium term?
- Optimizing configuration and density of tree species to maximize environmental system services and residential happiness
- What is the impact of shifts in home ownership on tree survival rates and overall health?

A view of Granville Ave in 2023

Thank you

DCR Foresters

US Department of Agriculture

Worcester Tree Initiative (New England Botanical Garden)

Worcester Technical High School (Environmental Science and Technology Program)

City of Worcester

Clark Geography - Aidan Giasson and Yaa Poku

Clark Marsh Institute Staff - Pamela Dunkle








Questions?

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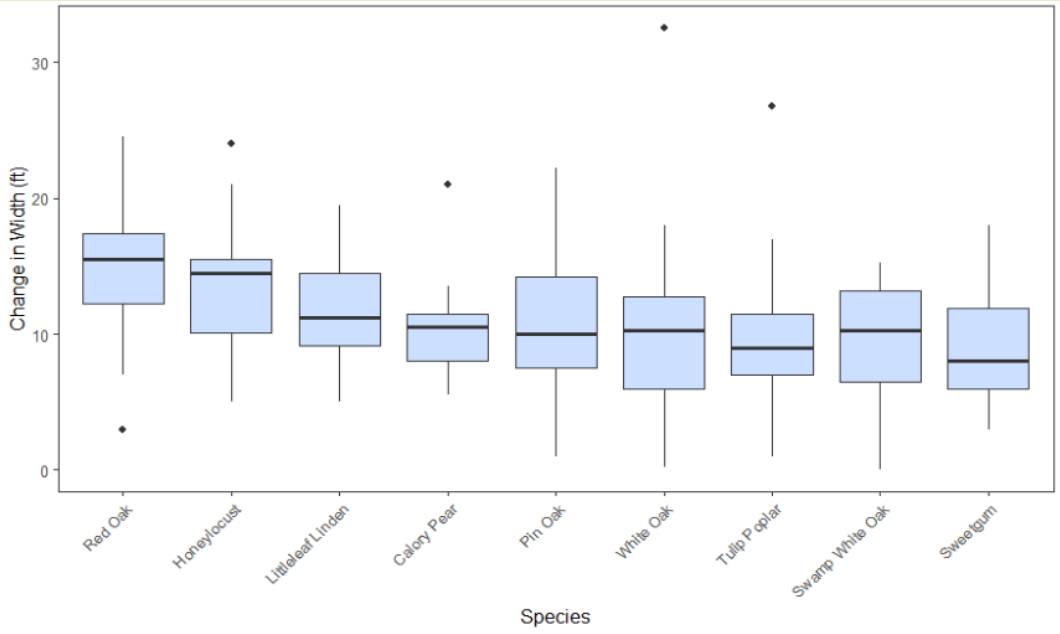
Change in Tree Crown Width



38 ft width Honeylocust (Gleditsia triacanthos)

Species	Width in 2023 (ft)	Change in Width (ft)
Red Oak	29.6	14.8
Honeylocust	32.0	13.4
Littleleaf Linden	22.8	11.9
Pin Oak	25.6	10.0
White Oak	21.0	10.0
Callery Pear	24.8	9.3
Swamp White Oak	21.7	9.3
Tulip Poplar	22.0	9.2
Sweetgum	20.6	9.1

Attachment B

Eric D. Batista
City Manager

FOR IMMEDIATE RELEASE: 9/13/2023
MEDIA CONTACT: Tom Matthews, MatthewsT@worcesterma.gov

Worcester Awarded $409K Climate Resilience Grant

City to plant two Miyawaki forests

WORCESTER, Mass. – The City of Worcester is thrilled to announce it has received a $409K climate resilience grant to plant two Miyawaki forests and design two resilient community place-making spaces.

Awarded by the Healey-Driscoll Administration's Municipal Vulnerability Preparedness (MVP) program, which is administered by the Executive Office of Energy and Environmental Affairs (EEA), these grants support communities in identifying climate hazards, developing strategies to improve resilience, and implementing priority actions to adapt to climate change. Worcester is one of 79 projects to have received action grant funding in the latest round of applications.

"This grant will empower the City to take a big step forward in planting its first two Miyawaki forests, which will address urban heat islands and provide numerous climate mitigating benefits," said Chief Sustainability Officer John Odell. "Prior to planting, we will seek public input to assist in identifying possible locations for the forests that are within environmental justice communities."

Miyawaki forests are named after Japanese botanist Dr. Akira Miyawaki, who developed a method of creating fast-growing native forests that are densely arranged and multi-layered. The forests are known to help with carbon dioxide absorption and managing stormwater run-off.

"We thank the Healey-Driscoll administration for this grant as it will help grow our tree canopy and bring relief to urban heat islands as we continue to prepare our community for a changing climate," said City Manager Eric D. Batista.

The MVP program, created in 2017, provides funding for community-driven climate resilience planning and action. A total of 349 out of 351 of the Commonwealth's cities and towns are participating in the program and more than $131.5M has been awarded for local climate resilience planning and projects.

* * *

Attachment C

Help Worcester Build Resilience to Extreme Flooding

POSTED BY GREEN WORCESTER TEAM ON 09-15-2023

Part of Green Worcester's mission is to work with community members to establish structural and institutional support systems that can protect us from climate change impacts including severe storms, extreme heat, and flooding.

What is the connection between climate change and flooding?

While world leaders have made progress on reducing global greenhouse gas emissions and pollution, the planet is still heating up, meaning communities like Worcester need to know the risks that come with a warmer world. According to the Environmental Protection Agency, climate change is projected to increase the frequency and intensity of extreme precipitation and storms, which can lead to hazardous flooding.

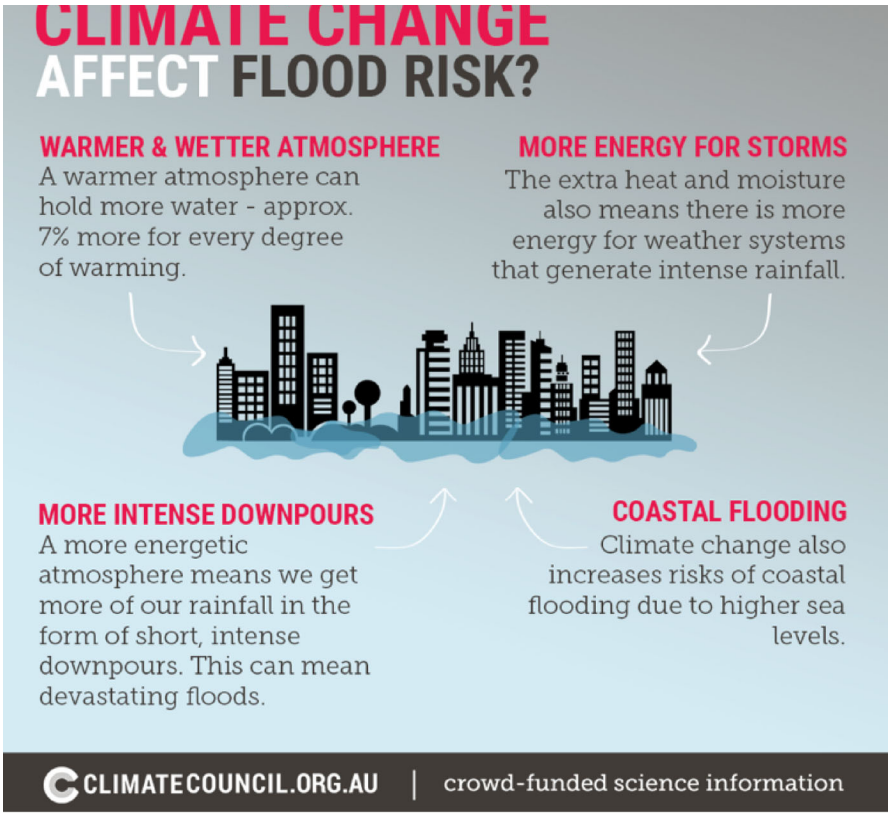


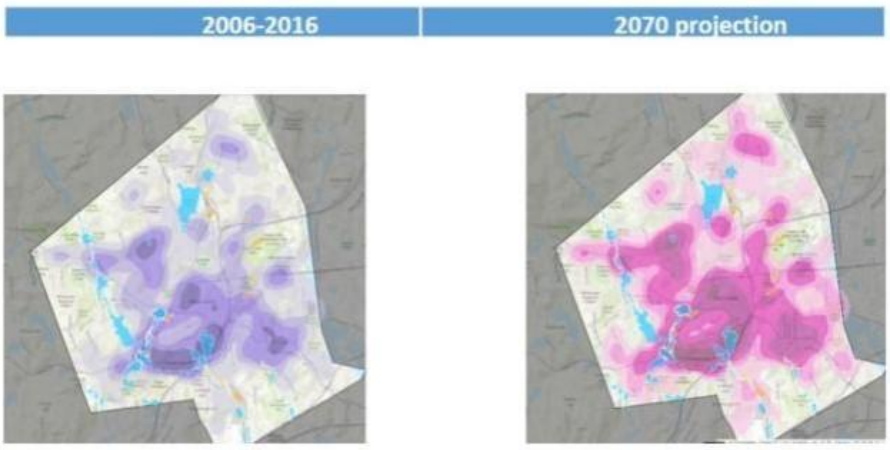
Image Credit: Climate Council

What about Worcester?

A warmer and wetter Worcester means more flooding than we've had previously. The City is frequently impacted by extreme precipitation. The rain floods several low-lying areas as well as areas with limited stormwater drainage capacity. Neighborhoods like Green Island, Cambridge Street, Southgate Street, and Pelham Street are especially vulnerable.

Future projections indicate that city infrastructure will become further stressed under extreme flooding events. This hazard impacts public transportation, can result in significant property loss, and can create public health and safety issues.

Using historic flooding data, Worcester developed flood projection maps (see below) which compare the flood-impacted areas from 2006-2016 to the projected impacted areas in 2070. As you can see, 2070 could see a lot more flooding than we have in the past few years.



How is the City taking action?

Preparedness Plan which detailed steps the City can take to reduce flooding risks. The City has begun following the plan's recommendations by installing natural flood protections like rain gardens on city property, installing permeable pavement in parks such as Coes Knife Park and Crompton Park, and is creating a Drainage and Green Infrastructure Master Plan. The plan will help us determine what areas of the City need grey infrastructure upgrades (aka: better plumbing) and identify opportunities for green infrastructure projects.

How can YOU help the City reduce flooding and increase its resilience to extreme weather?

As part of the Drainage and Green Infrastructure Master Plan, the City launched the Flood Watch community science project. Community Scientists monitor local flooding by taking photos, videos, and field notes to help pinpoint needed improvements to the City's stormwater system. This is a great opportunity for volunteer community members and students to aid Worcester's resilience efforts!

Register to participate here!

The City held a Virtual Training Session on July 12, 2023. You can view the recorded session and slideshow presentation below.

Watch the recorded presentation

View the presentation PDF

Green Worcester Plan Progress Report

City of Worcester

April 2021 – October 2023

Executive Summary (to be written)

Reading This Report

As part of the Green Worcester Plan, the City made a commitment to transparency and accountability. This progress report provides a status update for all the actions listed in the Green Worcester Plan, since the inception of the plan in April 2021 through October 2023. This report is broken into ten sections, covering Chapters II-XII of the plan. Each table includes the action item, the status, and a short description of our progress. We are using the following system to designate each goals status:

Table Legend

Status	Description
Not Started	This action has not been started
In Progress	The City has begun executing this action
Ongoing	An action that calls for a recurring action
Completed	The action is complete, and all milestones have been reached
Refocused	Action wasn't feasible, relevant, and/or necessary and therefore, it was refocused to similar action in line with the intention of the initial action

Table of Contents

Chapter II – Stewardship, Transparency, and Accountability

Action	Status	Progress
1. New Department of Sustainability: Create a Department of Sustainability and Resilience within City government separate from a new Public Facilities Department (and retire the Energy and Asset Management Division)	Completed	The Department of Sustainability and Resilience (DSR) was founded in July 2021. DSR now has 12 staff members.
2. Sustainability and resiliency codes and regulations: Ensure that the City provides sufficient enforcement, training, and knowledgeable staff to develop and implement sustainability and resiliency codes and regulations.	Ongoing	The City, through the vote of the City Council, has adopted a highly efficient energy building code, the Specialized Stretch Code which will go into effect on July 1, 2024. The Department of Inspectional Services (DIS) will receive the needed training to enforce the new code.
3. Green Worcester Advisory Committee: Create a Green Worcester Advisory Committee made up of non-governmental stakeholders to serve as the forum for information exchange and to advise on the City's sustainability and resilience activities.	Completed	The Green Worcester Advisory Committee had their first meeting on March 7, 2022. The committee has seven members, with each district having at least one representative.
4. Green Worcester Fund: Create a Green Worcester Fund for the City's sustainability and resilience programs.	Completed	The City has a Carbon Mitigation Fund that provides modest funding to DSR, allowing them to partially fund their staff and pursue carbon mitigation projects.
5. Sustainability Performance Outcomes for New Development	Refocused	The City is pivoting from developing our own performance metrics to implementing the State developed Specialized Stretch Code.
6. Develop and implement a Sustainability and Resiliency Dashboard.	Completed	DSR published a dashboard highlighting the City's accomplishments and outlining how residents can help us meet our sustainability goals. It was launched for Earth Day 2023 and is updated on a continuous basis
7. Annual Progress Report: Prepare an annual public progress	Ongoing	The City is committed to updating this report annually. In the future we will adapt the timescale of this report to capture developments over the previous calendar year.

8. Outreach Strategy: Implement a transparent Green Worcester outreach strategy to include traditional and new media and activities.	Ongoing	DSR is spearheading Green Worcester's outreach strategy. DSR has monthly communication strategy meetings and is reaching out to people through monthly newsletters, surveys, the Green Worcester Dashboard, social media posts, and radio PSAs.
9. Data and Data-Driven Decisions: Work with the Office of Urban Innovation to develop relevant datasets to measure progress and make data-driven decisions about sustainability and resilience.	Refocused	DSR has hired an internal Energy Analyst, has created the Green Worcester Dashboard to better display our data, and has begun compiling data from other departments to keep better track of our energy and sustainability data.
10. School Curriculum: Integrate sustainability and resilience into the curriculum at all levels in the Worcester Public Schools	Ongoing	The City has begun making connections with Worcester Public School staff, and city staff has met with environmental groups at the high schools to discuss sustainability and resilience in Worcester.
11.Promotion to Private Stakeholders: Publicize and promote the Green Worcester Plan to important city stakeholders and civic groups such as the large and small business community, realtors and developers, neighborhood associations, educational and medical institutions, faith communities, immigrant associations, and social services groups.	Ongoing	DSR held 35+ public presentations for city stakeholders including the Worcester Garden Club, the Worcester Board of Health, and the Worcester Business Improvement District.
12. Business Committee: Encourage the Greater Worcester Chamber of Commerce to create a sustainability and resilience committee.	Refocused	DSR has developed a working relationship with the Chamber of Commerce on sustainability, energy, and zero waste related projects.
13. Worcester Civic Group on Sustainability and Resilience: Promote and help create a citywide sustainability/resilience umbrella group or coordinating network to link existing organizations, provide public information and access to ongoing activities, and work with the City and other partners to achieve Green Worcester goals.	Not Started	
14. Collaboration with Educational Institutions: Promote continued collaboration with the City's educational institutions to achieve Green Worcester goals.	Ongoing	The City has made several successful connections with local higher education institutions, including Clark, WSU, and Holy Cross, and is continuing to build our connections with educators in lower education in Worcester.

15. Pilot “Sustainability District”: Designate one or more pilot “Sustainability Districts” as areas to test, refine, and promote new sustainability and resilience efforts.	In Progress	The City lobbied with local neighborhood groups to be part of the geothermal networked neighborhood pilot project managed by Eversource, but our efforts were not successful. We will continue to look for similar opportunities.
16. LEED Certification: Consider seeking LEED certification as a sustainable community.	Not Started	
17. Mayors’ Covenant: Join the Global Covenant of Mayors for Climate and Energy.	Not Started	
18. Urban Sustainability Network: Join the Urban Sustainability Directors Network.	Completed	DSR joined in July 2022 and we have used the network for learning opportunities such as webinars, connecting with other municipal staff and posting our job openings.
19. Carbon Neutral Cities: Seek nomination for membership in the Carbon Neutral Cities Alliance.	Not Started	

Chapter III - 100% Clean and Affordable Energy

Action	Status	Progress
1. Zero Emissions: Eliminate 100% of greenhouse gas emissions citywide.	In progress	The City has adopted a highly efficient energy building code, the Specialized Stretch Code which will go into effect on July 1, 2024, making us the first Gateway city in the state to do so. This new code is essentially a "net-zero" code and requires mixed-fuel new construction to be pre-wired for electrification and install solar PV on a formula basis. The Green Worcester ElectriCITY Aggregation program will be providing 40% additional premium renewable electricity to residents and commercial customers with the new aggregation contract beginning in December 2023 and ending in December 2025. A Greenhouse Gas Emission Inventory was completed in 2022, comparing the progress from 2009-2019. The City is completing the most recent Energy Saving Performance Contract with Honeywell and launching the next phase soon. This contract will include an audit to determine our next steps for energy efficiency in municipal buildings.
2. Community Choice Program: Achieve 100% renewable electricity sources by 2035 via aggregation.	In progress	See above (Chapter III, Action 1)
3. Carbon Neutral Cities Alliance: Seek nomination for membership	Not started	
4. Net Zero City Operations: Aim to make city facilities and operations net zero by 2030, including the city vehicle fleet.	In progress	The City is completing the most recent Energy Saving Performance Contract with Honeywell and launching the next phase soon. This contract will include an audit to determine our next steps for energy efficiency in municipal buildings.

		See Chapter VI, Action 6 for details on city fleet.
5. Flexible Commutes for City Employees: Develop commuting and/or work at home programs for City employees to cut emissions.	Not started	
6. Identify opportunities for innovative energy pilot projects.	Ongoing	The City lobbied with local neighborhood groups to be part of the geothermal networked neighborhood pilot project managed by Eversource, but our efforts were not successful. We will continue to look for similar opportunities.
7. Building Disclosure Policy: Adopt a building performance disclosure policy for non-residential buildings.	Not started	
8. PACE Program: Opt into the proposed Massachusetts PACE (Property Assessed Clean Energy) program.	Not started	
9. Public EV Charging: Establish EV charging stations in all City-owned parking areas with 20 or more parking spaces.	In progress	The City installed 6 charging ports in 3 public municipally owned garages (Pearl Elm, Worcester Common, and Federal Plaza) for a total of 18 new ports in 2023. For more details, visit: Vehicle Electrification | City of Worcester, MA (worcesterma.gov) and see Chapter XI.
10. Multifamily EV charging: Require EV stations and EV-ready parking at all new 5-unit plus multifamily buildings with on-site parking	In progress	Effective July 2024, 20% of residential and business parking spaces will be required to be wired for electric vehicle charging due to updated building codes
11. Solar Zoning Ordinance: Develop and adopt a solar zoning ordinance with clear standards for siting solar farms and solar installations (residential and commercial).	Not started	
12. Solar Map Tool: Work with educational institutions to create a solar map tool with information on solar opportunities in Worcester, including information on utility poles, roof material, and so on.	Not started	

13. Regional Electricity Aggregation: Work towards becoming a Level II Aggregator	Not started	
14. Energy Ownership Models: Support efforts to diversify energy ownership models.	Not started	

FIRST PERSON

Building code could help city in battling climate crisis

Ted Conna and Paul Popinchalk
Special to Worcester Magazine
USA TODAY NETWORK

Why are we afraid to construct buildings as if we care about the future?

Developers need not fear the state's Specialized Stretch Code, also known by its acronym, SSC. This new building code was developed to help meet the state's mandate to decarbonize our economy by 2050. In Worcester, the target date is 2045. A key strategy is to electrify transportation and building heating, the two largest sources of carbon emissions in the state. Concerns that the code would drive up costs for developers are misleading, and ignore the problem it is meant to address.

We are in the early stages of a climate crisis that is creating unprecedented weather extremes across the globe. The residents of Vermont and the Pioneer Valley are just the latest of many victims of extreme weather, flooding, forest fire, ocean acidification, and extreme drought.

To avoid the worst predictions of climate change, we need to reduce our carbon emissions now and the SSC is a low- to no-cost option to kickstart the process.

The Specialized Stretch Code will encourage the use of high-efficiency heat pumps, the low-emission choice for heating and cooling, in new construction. This technology has the lowest life-cycle cost based on modeling done by the state Department of Energy Resources. Moreover, buildings free of fossil fuels are safer and healthier–there is no oil to spill, no gas to leak or explode, and no hydrocarbon pollution in the air we breathe.

Under the code, higher costs will be incurred only if the developer chooses to take the fossil fuel heating option. The code does not prevent developers from making that short-sighted decision. It only requires that their fossil-fueled buildings be wired now for the electrification that will be needed in the future, when someone else will have to bring them up to date.

A good building code considers the life cycle of the building, promotes efficiency, and discourages the use of obsolete technology. There is always a learning curve with new technology, but as the construction industry gains experience with electrification, costs will come down, and those who learned first will have the advantage. Because buildings with heat pumps are expected to have the lowest life-cycle cost, it's becoming a better choice to build that way – but no one is forcing the developer to do so.

When the city declined to join a pilot last year that would have allowed Worcester to ban new fossil fuel installations entirely, the reason given was that we could reduce fossil fuel use, with greater flexibility, by waiting to adopt the SSC when it came out. The time has come to make good on that.

We need to change our old ways of thinking about development. The notion of continuous growth in an ecosystem of finite capacity is a dangerous illusion on a collision course with reality. We must account for the costs of not acting to mitigate extreme weather fueled by climate change. Hurricane Sandy caused $60 billion in damages. Our neighbors in Western Massachusetts and Vermont have lost homes and livelihoods in recent flooding. We need to be responsible to each other, to future generations, and especially to those most vulnerable to these harms.

The Worcester City Council declared a climate emergency in 2019. An effective response to this emergency requires that we adapt and change, not maintain the status quo. At another inflection point in human history, Albert Einstein was credited with saying, "We cannot solve problems at the same level of thinking that created those problems."

We call upon the city administration to support the adoption of the Specialized Stretch Code, which would recognize our moral responsibility to think in new ways about how to address our climate emergency, and would continue Worcester's legacy of compassionate care for its residents.

We are grateful that the City Council unanimously adopted the Green Worcester Plan in 2021, with the goal of phasing out Worcester's use of fossil fuels for heating and transportation by 2045. It is critical that we succeed in that major transition, and new construction is the low-hanging fruit.

Worcester has tens of thousands of old homes and buildings in need of energy upgrades and retrofits. Why would we keep adding to this problem?

If we listen to the short-sighted objections of those who resist building with the future in mind, we will never meet our target, and we will go on paying the ever-higher financial and human costs of our climate inaction.

We are hopeful that the city administration and the City Council will affirm their commitment to the Green Worcester Plan by acting soon to implement the Specialized Stretch Code in Worcester.

Paul Popinchalk represents 350 Central Mass. Ted D. Conna represents District 4 on the Green Worcester Advisory Committee, which promotes the full implementation of the city's award-winning Green Worcester Plan and has unanimously endorsed the adoption of the SSC. The viewpoint expressed here is consistent with the Green Worcester Plan.