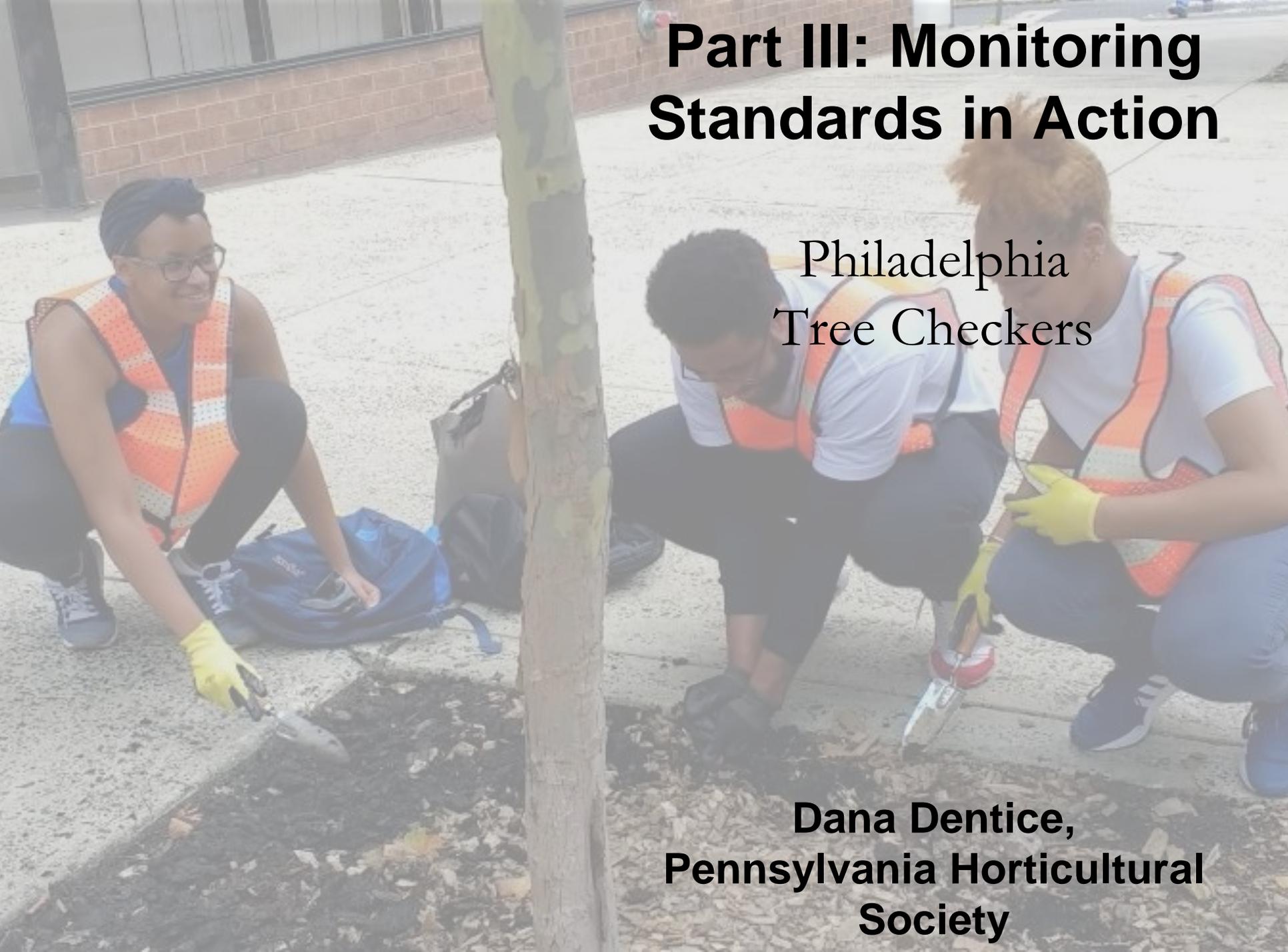


# Part III: Monitoring Standards in Action

Philadelphia  
Tree Checkers

Dana Dentice,  
Pennsylvania Horticultural  
Society





## Mission

*We connect people with horticulture, and together we create beautiful, healthy and sustainable communities.*

Urban greening and training programs:

Garden Tenders  
Vacant LandCare  
City Harvest

Tree Tenders  
Rain Check  
Roots to Re-Entry

# PHS tree tenders

Education  
Community forestry

- Empowering people to plant, care for, and advocate for trees

*5,000+ Tree Tenders graduates since 1993*



# PHS tree tenders

## Philadelphia Tree Planting

- 800-1000 trees annually, led by 30-35 civic groups
- Mostly street trees (by owner request)
- 1.5" bare root stock



# What is Tree Checkers?

- Volunteer/citizen/community science data collection
  - *Tree survival, size, health, stewardship*



## The Data Collectors

- Certified Tree Tenders
- Other neighborhood tree stewards
- University students, PHS interns



# What is Tree Checkers?

- Volunteer/citizen/community science data collection
  - *Tree survival, size, health, stewardship*
- Engagement with tree owners



## The Data Collectors

- Certified Tree Tenders
- Other neighborhood tree stewards
- University students, PHS interns



# Tree Recipient Engagement

- In-person interactions
- Tree check-up report



## PHS tree tenders

Hello, I'm a volunteer Tree Checker with

Thank you for taking the first step in greening our city by requesting a tree! Did you know that by caring for your newly planted tree, you are investing in decades of tree benefits? The care a tree gets during its first year in the ground often determines its long-term survival.

Below is a summary of your tree check-up and important tree care guidelines.

### Tree Check-Up Report

#### Water

- Thank you for adequately watering your newly planted tree.
- Water is crucial for your tree's survival, especially during the first year after planting. Give your tree 15-20 gallons of water per week, applied slowly and gently with a trickling hose. Water from mid-March until November.

#### Weed and Clean

- Thank you for keeping your tree pit weed & trash free.
- Please take the time to weed and clean your tree pit. Weeds and trash can prevent water from reaching tree roots, causing a decline in your tree's health. Substances like motor oil, de-icing salt, detergent, and urine can kill your tree.

#### Aerate Soil and Expose Root Flare

- Thank you for keeping the ground around your tree free of compacted soil and making sure that your tree's root flare is not buried.
- Loosen the soil around your tree using a hand trowel. Compacted soil prevents water and air from reaching tree roots. The root flare is where the trunk widens and the roots begin. Buried root flares can kill trees, so make sure that your tree's root flare is visible at the surface of the soil.

#### Mulch

- Thank you for mulching your newly planted tree.
- Please add mulch around your newly planted tree. Mulch conserves soil moisture, controls weeds, keeps roots cooler in the summer and warmer in the winter, and prevents lawnmower damage and soil compaction. Remember to weed and cultivate the soil before mulching. Follow the 3-3-3 rule of mulching: no more than 3-inches thick, 3-inches away from the trunk so as not to bury the root flare, and a 3-foot wide circle (if possible).

### Overall Health and Comments

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For more information and to watch videos on how to properly care for your newly planted tree, please visit [phsonline.org](http://phsonline.org), click on "Trees," and follow the link to "Watch Videos on Tree Planting & Care."

If you would like to learn even more and become a Tree Tender® go to [phsonline.org](http://phsonline.org) and click on "Tree Tenders."



**PLANT ONE MILLION**

3 states. 13 counties. 1 tree at a time.

[PlantOneMillion.org](http://PlantOneMillion.org)

Led by the Pennsylvania Horticultural Society (PHS) and partners, Plant One Million is the nation's largest multi-state tree campaign. The project aims to replenish the tree population of 13 counties in the Greater Philadelphia region, including southern New Jersey and Delaware.

 [PHSonline.org](http://PHSonline.org)

# What is Tree Checkers?

- Volunteer/citizen/community science data collection
  - *Tree survival, size, health, stewardship*
- Engagement with tree owners
- Optional tree/pit care



## The Data Collectors

- Certified Tree Tenders
- Other neighborhood tree stewards
- University students, PHS interns



# Tree Checkers Goals

- Increase tree survival during establishment
  - Promote stewardship through engagement



# Tree Checkers Goals

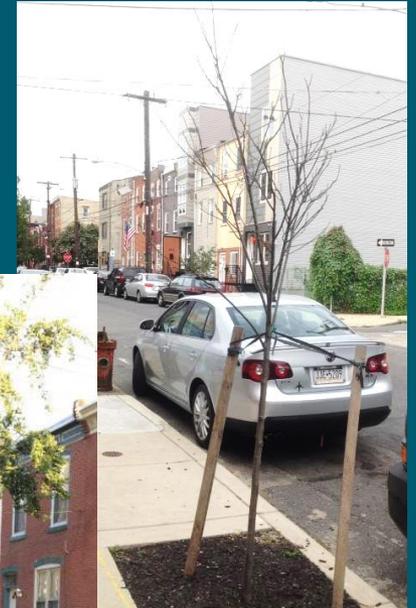
- Increase tree survival during establishment
  - Promote stewardship through engagement
- Address trees that need attention
  - Replacement list
  - Tree care action items





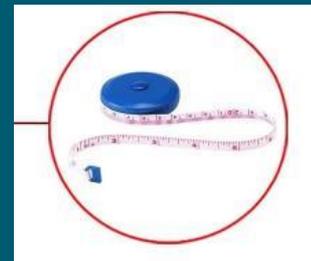
# Monitoring Variables

- Location (address & site code)
- Species
- Mortality status
- Crown vigor (5 classes)
- Trunk circumference
- *Additional health and stewardship indicators*



# Trunk Measurements

- Circumference (cm)
- Circumference measurement height on trunk (cm)



## Equipment:

Flexible measuring/sewing tape

Rigid measuring tape

## Additional Variables

- Tree health issues
  - Root flare buried
  - Broken branches
  - Suckers
  - Bark damage



- Site condition - stewardship indicators
  - Weeds/trash
  - Mulch
  - Dry soil



## Additional Variables

- Monitoring notes
- Maintenance actions and followup
- Method of owner engagement
- Admin
  - Planting record note
  - Replacement request



# Managing Field Work

- Good baseline planting records
- Data collection methods (paper, mobile)
- Equipment and supplies
- Training volunteers (protocols, safety)
- Coordinating volunteer field work



# Data Collection

## PHS 2019 Tree Checkers Worksheet

**MORTALITY STATUS** Alive (A) Standing Dead (S) - do the 'Wood Test' Not Planted (NP) Unknown (U) - can't locate  
 Stamp (S) Removed/Missing (R)

**GROWN VIGOR** 1 = Less than 10% crown dead/defoliated 2 = 10-25% 3 = 26-50%  
 4 = More than 50% dead/defoliated 5 = tree is standing dead

**MULCH** Good (G) Poorly Done (P) None (N) Too Little (L)

Tree Tenders Group: South Philly Green

Tree Checker Name:  
 Date Inspected:

Record how you first found the site, then you can do tree pit care

SITE ID (e.g. 1-F-2-F) Fu Front S Side Ru Rear Yu Yard (It signify tree position at address & they go up in direction addresses increase on blocks) Indicate "Flr" or "Ba" for living trees (NO BLANK FIELDS) Use 0 instead of tree code or position

Tree ID	Season Planted	Address	Street	Site ID	Location Notes	Species	Mortality Status	Grown Vigor	Mulch	Flr	Ba	Y	S	R	F	U	NP	Comments/Actions Taken	Followup Needed	
Example	2017 Fall	1254	Susanna Street	1-F	Street to corner, on 2nd St	Quercus rubra	A	2	P	L								HO is watering (gator), excavated root flare, weeded	needs pruning	
7209	2018 Fall	2053	Emily St	1-F		Fraxinus sargantii 'Pink Flair'														
7210	2018 Fall	1718	Marton St	1-F		Fraxinus sargantii 'Pink Flair'														
7211	2019 Spring	1718	McKellas St	1-F		Malus 'Red Jewel'														
7212	2019 Spring	2044	McKean St	1-F		Malus 'Pink Sparkles'														
7213	2019 Spring	2036	Mercy St	1-F		Cladrastis kentukea 'Pinkies Pink'														
7214	2019 Spring	2045	Mercy St	1-F		Acer truncatum 'Pacific Sunset'														
7215	2019 Spring	1714	McMillin St	1-F		Malus 'Purple Prince'														
7216	2018 Fall	1730	McMillin St	1-F		Cercis canadensis														
7217	2019 Spring	1830	McMillin St	1-F		Fraxinus sargantii 'Rancho'														
7218	2018 Fall	1824	McMillin St	1-F		Amselanchier laevis 'Lustre'														
7219	2018 Fall	2224	McMillin St	1-F		Fraxinus sargantii 'Pink Flair'														

## PHS Tree Checkers Cheat Sheet



June 22, 2017

### Mortality Status

Category (Code)	Description
Alive (A)	Green leaves and/or live buds, including trees with no leaves, but live buds and green tissue under bark
Standing Dead (S)	100% dead above ground (may have sprouts at base), no green tissue under bark, branches snap, more than 12 inches in height
Stump (S)	Under 12 inches in height, there may be sprouts
Removed/Missing (R)	Tree was planted at site, but no longer present
Not Planted (NP)	You know tree was never planted (no pit cut, data error)
Unknown (U)	can't find tree site (location notes unclear, multiple trees at site)



**Dead Test**—if there are no leaves, but you find green tissue under bark of twigs -> Alive!

If tree is standing dead, record Crown Vigor, any comments, and then stop.

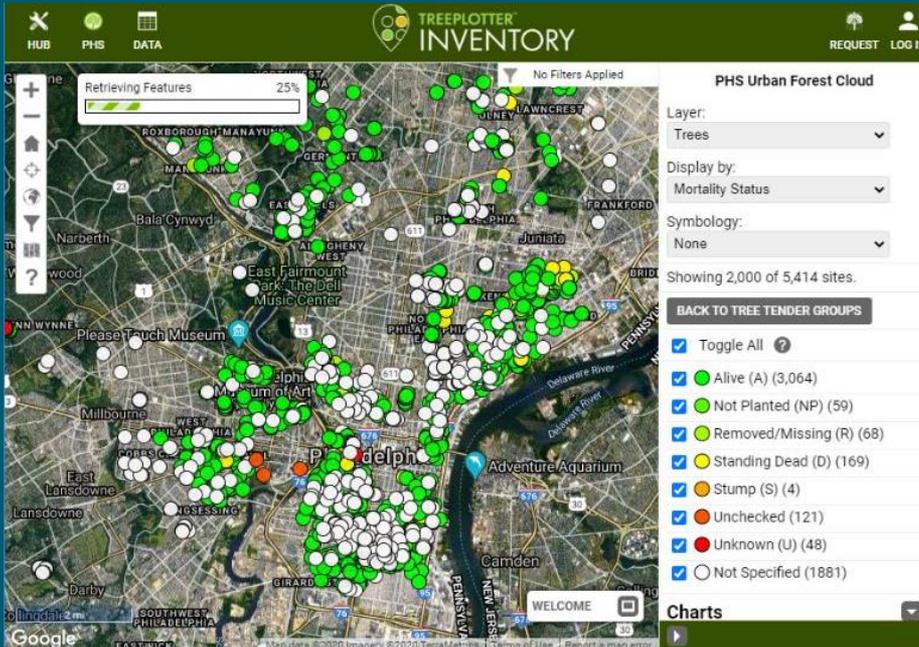
### Crown Vigor Rating (record for alive and standing dead trees only)

Class Code	Description
1	Tree appears to be in reasonably good health, no major branch loss, less than 10% cumulative fine twig dieback, defoliation and/or leaf discoloration present
2	Light decline, major branch loss, fine twig dieback, defoliation and/or leaf discoloration present in 10-25% cumulative of the crown
3	Moderate decline, major branch loss, fine twig dieback, defoliation and/or leaf discoloration present in 26-50% cumulative of the crown
4	Severe decline, major branch loss, fine twig dieback, defoliation and/or leaf discoloration present in more than 50% cumulative of the crown
5	Tree is standing dead - same as 'Standing Dead' for mortality status, no live buds, twigs, or leaves



1 2 3 4 5

Adapted from the UTGL Urban Tree Monitoring Protocol Field Guide



# Mobile & Online Data Collection

- PHS Urban Forest Cloud (Tree Plotter)
- Mobile device w/ internet — iPads, tablet, phone



# Mobile & Online Data Collection

TREE DETAILS - 1468

DELETE CLOSE LOAD LAST

\* All changes are saved automatically.

TREE SITE TREE CHECKERS MAINTENANCE CITY INSPECTION ADMIN/PERMIT HISTORY

Tree ID 1,468

Tree Checkers Project Year

Season Planted 2015 Fall

Address # 913

Street S 20TH ST

Site ID 1-F

Location Notes

Species (Latin Name) Acer rubrum

Cultivar Autumn Flame

Species (Common) - may need update Maple, red

Tree Checker Name \* Marcus Ferreira

Tree Checker Date \* 08/18/2016 CLEAR

Mortality Status \* Alive (A)

Crown Vigor \* 1

Circumference (1/10cm) \* 13.6

Circumference Measure Height (cm) \* 137

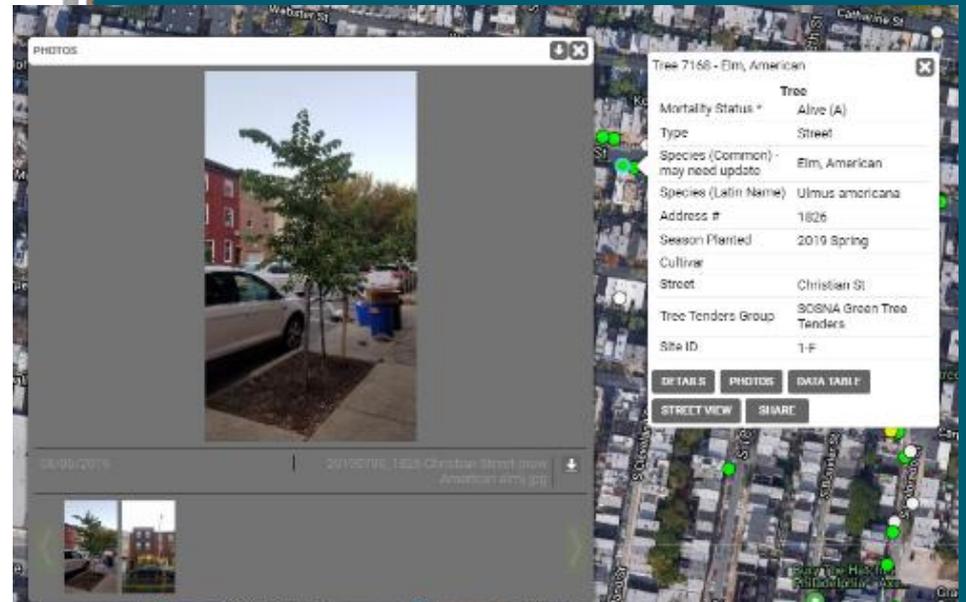
Mulch \*

Weeds/Trash Found  No  Yes

Dry Soil\*  No  Yes

Bark Damaged\*  No  Yes

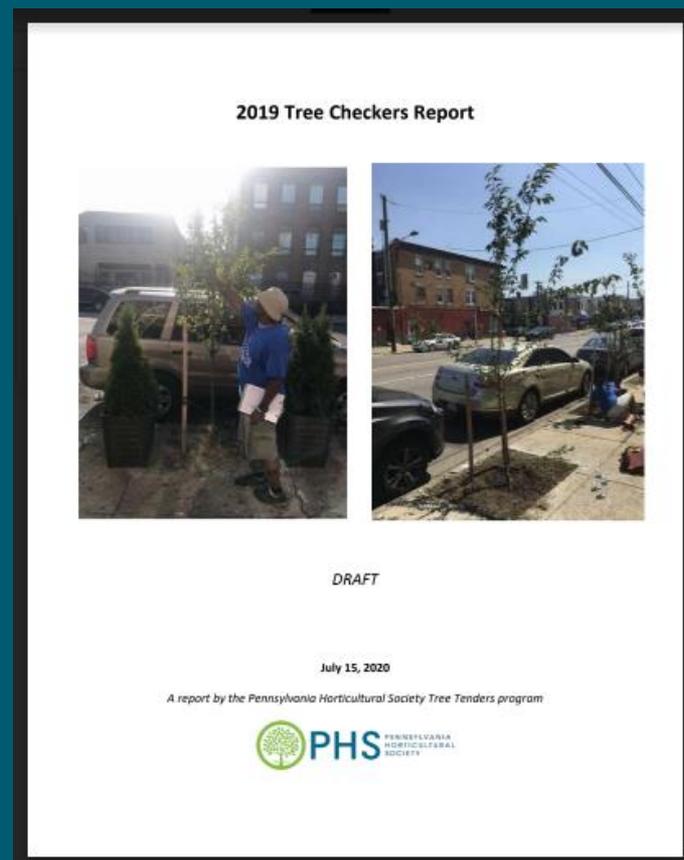
Broken Branches\*  No  Yes



Data reviewed for errors  
(photos help!)

# Using the Data

- Species selection
- Replacement list
- Identifying stewardship needs & issues
  - Individual trees
  - Tree care best practices

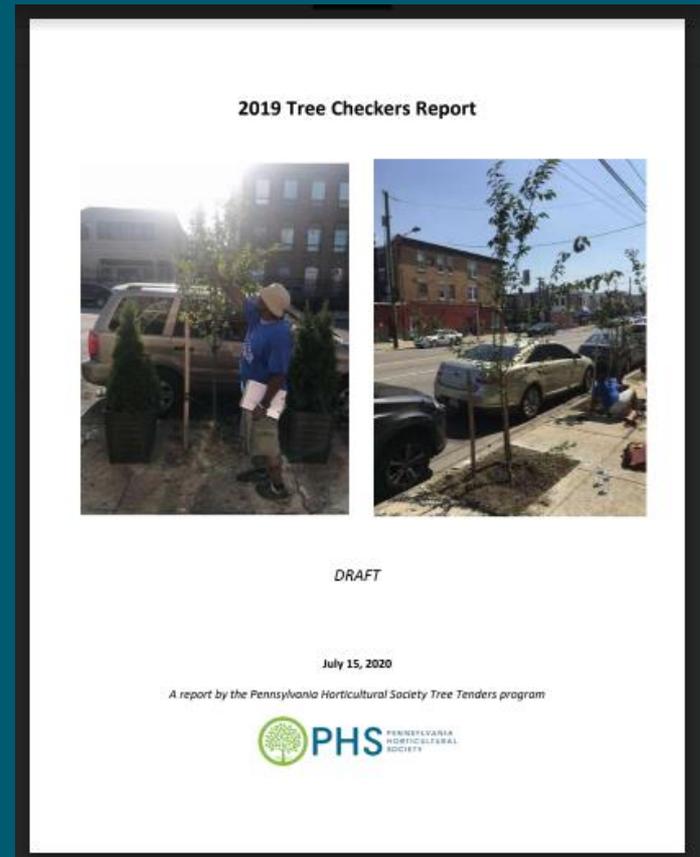


# Using the Data

	2015	2016	2017	2018	2019
Trees Planted	1030	922	797	755	924
Trees Checked	66%	71%	89%	87% (671)	76% (700)
Groups Participated	25/35	24/35	26/30	31/35	26/33
Owner Engagement	22% spoke to owner	21% spoke to owner	21% spoke to owner	22% spoke to owner 48% left report	31% spoke to owner 58% left report
<b>Trees Alive</b>	<b>90.6%</b>	<b>92.7%</b>	<b>90.5%</b>	<b>93.4%</b>	<b>94.1%</b>
Healthy Crown Vigor Class 1 or 2	85.6%	94.8%	90.9%	91.8%	91.9%
Mulch "Good"	39%	32%	44%	44%	40.2%
Buried Root Flare	31.3%	23.3%	27.2%	21.2%	24.1%

# Using the Data

- Species selection
- Replacement list
- Identifying stewardship needs & issues
- Cleaning up tree records
- Baseline data for future monitoring and growth analysis



# Lessons Learned

- Rigorous monitoring enabled by clean planting records and standards
  - confidence in the data
- Adapting monitoring to goals and research questions
- Learning new things about our trees and program

*“It gave me a chance to go around and check up on all the trees, build relationships with the homeowners, and make tree health a visible activity in the neighborhood.”*

*- Fair Hill Tree Tenders*



# Acknowledgements

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