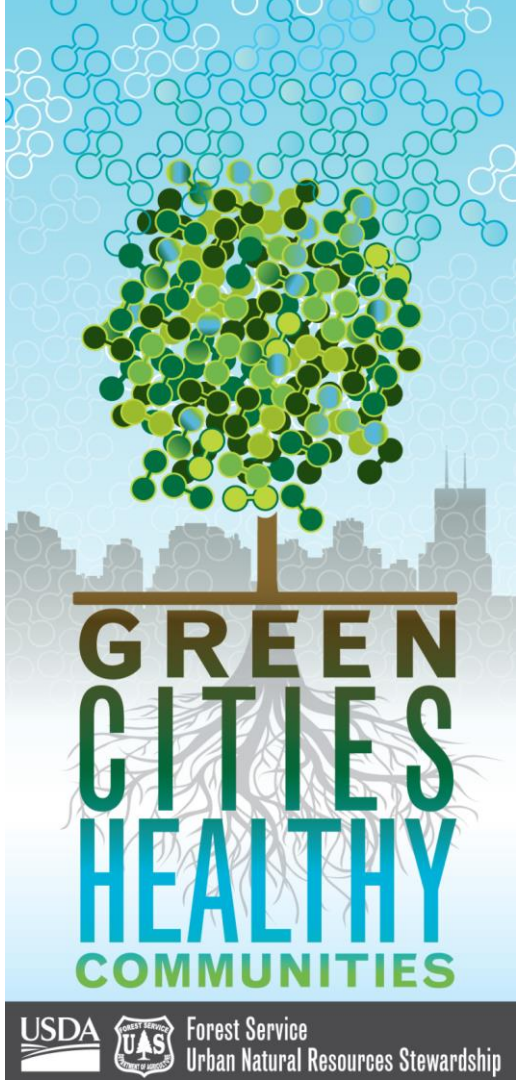


USDA Forest Service

URBAN FOREST CONNECTIONS

webinar series

Second Wednesdays | 1:00 – 2:15 pm ET

www.fs.fed.us/research/urban-webinars

Citizen Science and Open Data in Urban Forestry: Opportunities and challenges

Lara Roman

Research Ecologist

USDA Forest Service

lroman@fs.fed.us

Deborah Boyer

Project Manager, Urban Ecosystems

Azavea

dboyer@azavea.com

Trees and Citizen Science

Deborah Boyer
Project Manager, Azavea
dboyer@azavea.com

Opportunities

- Encourage public engagement with the urban forest
- Build interest in your organization’s mission
- Explore different options for citizen science projects that vary in cost, time commitment, and location
- Gather data that your organization can share back with the public

Challenges

- Organizing and running a project requires resources
- Making a project accessible to many groups is important
- Keeping momentum after a single event can be difficult
- Reviewing and sharing the results of the project takes time

Citizen Science Examples

- **Casey Trees** – Tree inventory, temperature study, phenology study, i-Tree ecosystem analysis
- **TreeMapLA** – Thirsty Thursday tree mapping events
- **City of Edmonton, Canada** – Tree data made available on city's Open Data Portal and residents encouraged to log stories about the trees

Citizen science is the collection and analysis of data relating to the natural world. At Casey Trees our citizen science volunteers traverse the city collecting and documenting tree data that will be used to advance the field of urban forestry.

Text from Casey Trees website

Citizen Science Examples

- **The Greening of Detroit** - Interns and volunteers mapped over 20,000 trees and listed key data such as species and diameter in order to support tree maintenance
- **Canopy** – Young Tree Care Survey with reports made available online
- **Treezilla** – The “monster map of trees” tracks tree related data across Great Britain
- **Philadelphia Parks and Recreation** – Philly Forest Science project

How Do I Get Started?

- Consider what projects would be beneficial to both your organization and the citizen scientists
- Review similar projects at other organizations to generate ideas and discover lessons learned
- Decide the scope, timespan, and logistics for the project (number of participants, dates, etc)
- Create a plan for providing the results of the project to participants
- Share widely!

Trees and Open Data

What is open data?

- Freely accessible structured data
- Often, but not always, related to governmental groups
- Available online, generally through data portals (i.e. https://www.data.gov/, https://data.lacity.org/, https://data.cityofchicago.org/)
- May be included in citizen science projects or on non-profit websites (i.e. eBird, Friends of the Urban Forest)

Opportunities

- Share data and encourage public engagement
- Generate interest for organization’s mission
- Support new projects, collaborations, and applications based on open data sets
- Measure program effectiveness and find places for improvement

Challenges

- Data selection and organization require resources
- Accessibility involves more than just posting a CSV file
- Legal restrictions and liability concerns may limit what data is included
- Data must be discoverable and include a clear license

OpenDataVote

OpenDataVote encourages citizens to get involved in the process of open government and cultivates government transparency through the release of data.

- Held in Philadelphia in March – May 2017
- Builds on open data work such as Open Data Philly and the Open Data Race (2011)

OpenDataVote

PHASE 1

Nomination

Nonprofit organizations nominate one or more existing data sets that would be useful to the organization, but aren't currently available to the public.

PHASE 2

Voting

The general public votes for either their favorite organization or the data set they want to see released.

PHASE 3

Data Release

OpenDataVote Partners will work with government representatives to publish the data sets that receive the most votes from the public. Nonprofits will be awarded prize money from OpenDataVote Sponsors if their data nomination wins!

OpenDataVote

Results

3rd Place - PHS Pennsylvania Horticultural Society

- Seeking street right-of-way data to drive planting decisions and streamline the street tree approval and planting process
- Receives $1,000 award
- OpenDataVote partners will work with the City of Philadelphia to release the applicable data.

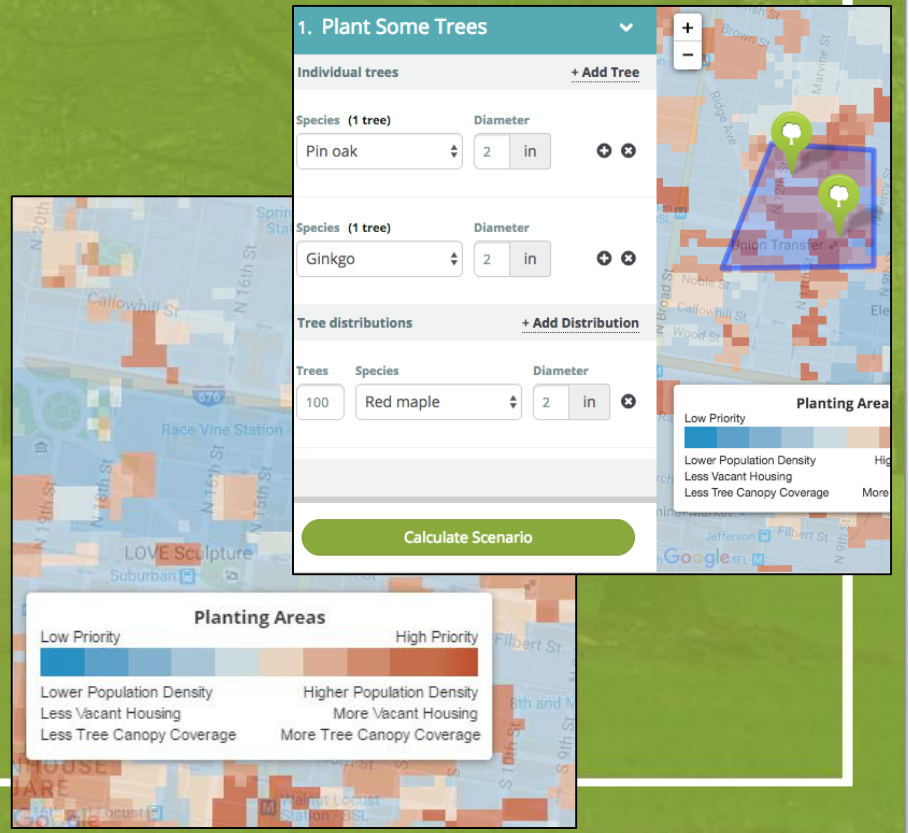
ECOCAMP

- Workshop/unconference/hackathon organized in Philadelphia in June 2014
- Over ninety attendees from the environmental and tech communities
- Prompted the City of Philadelphia to release fifteen environmentally related datasets related to vacant lot clean-ups, rain barrel placements, street tree pruning, yard tree giveaways and more
- Mixed results

Photo credit: Azavea

OpenTreeMap Modeling and Prioritization

- Identify optimal planting locations based on existent data
- Project potential tree benefits and overall growth and mortality
- Uses open data available from the National Land Cover Database, US Census, and the Urban Tree Database
- Open data powers similar tools such as i-Tree Forecast and the Trees and Health App (http://map.treesandhealth.org/)



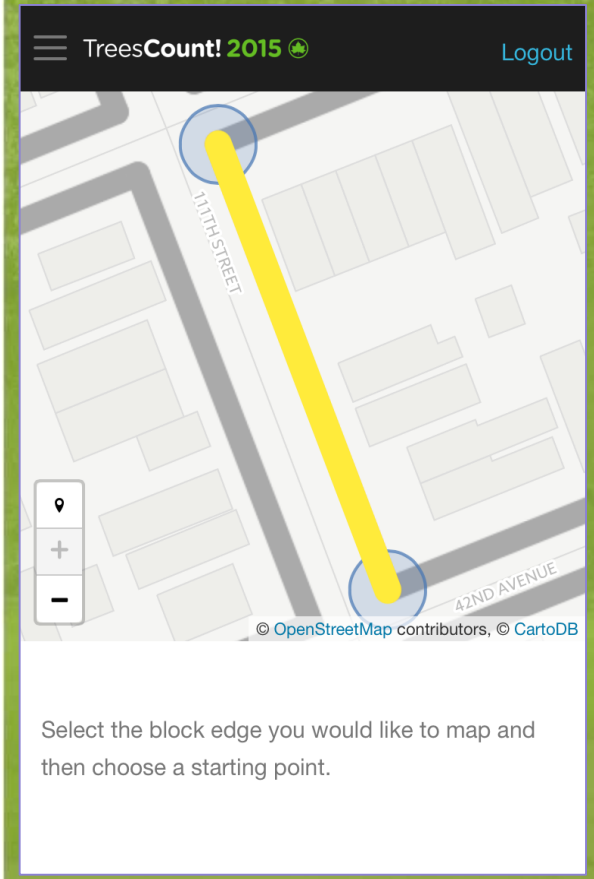
Open Data + Citizen Science = Happy Trees and Happy People

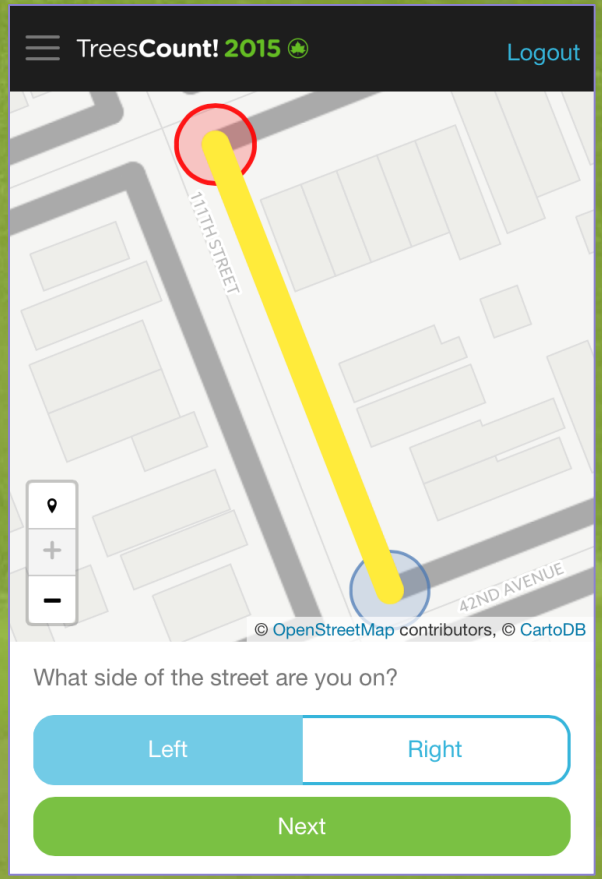
Most of the time….

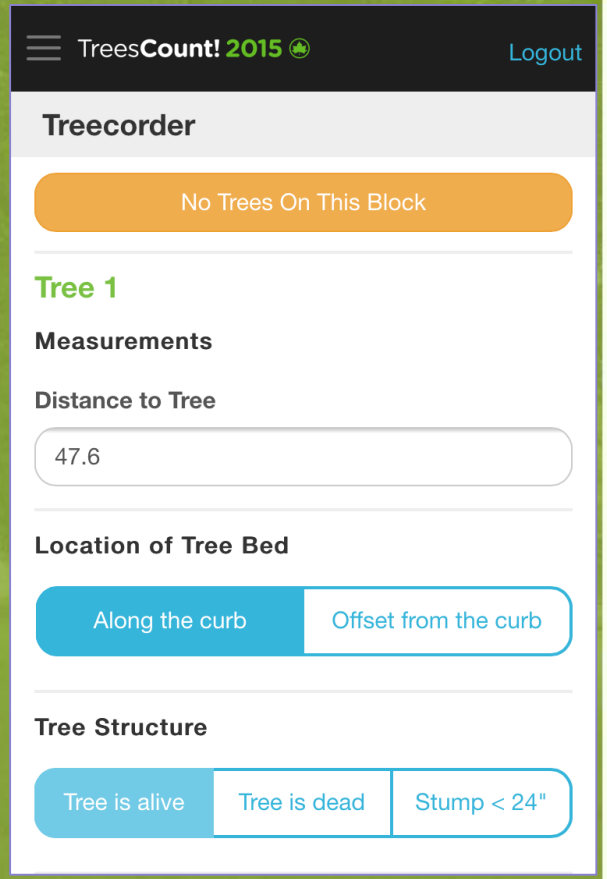
TREES COUNT 2015

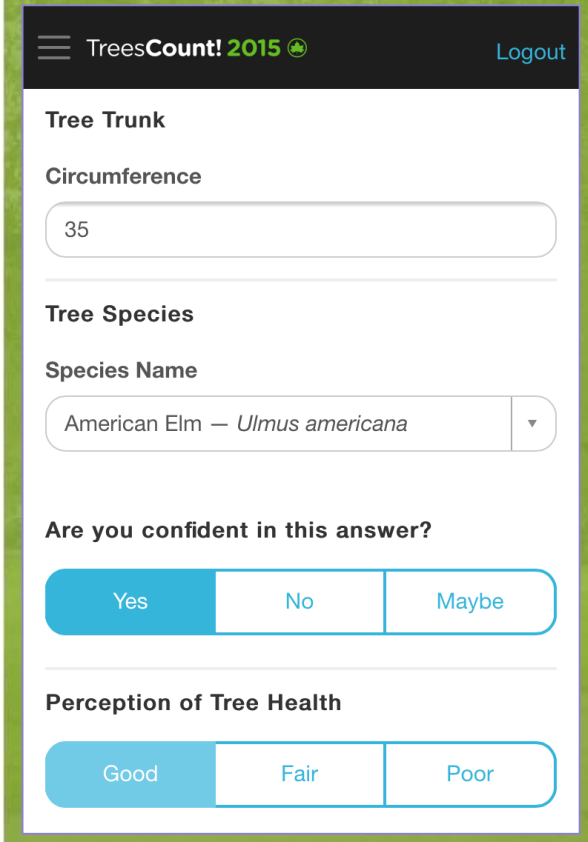
- From 2015-2016, 666,134 street trees on 131,488 blocks were mapped with the assistance of 2,241 volunteers who completed 34% of the census
- Data available at New York City Street Tree Map - https://tree-map.nycgovparks.org/
- Open Data Workshop using TreesCount data in June 2017
- More info available at https://www.nycgovparks.org/trees/treescount
- Open source code available at https://github.com/azavea/nyc-trees

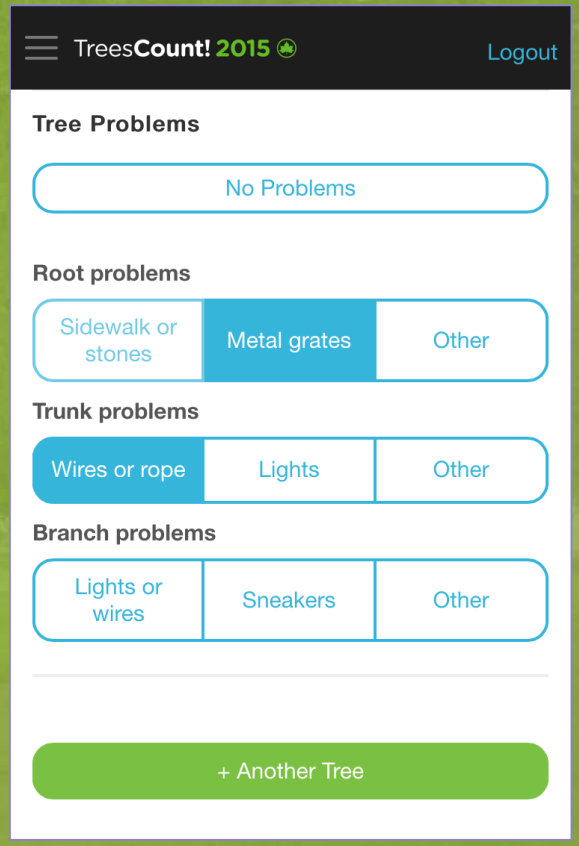
Photo credit: Deb Boyer

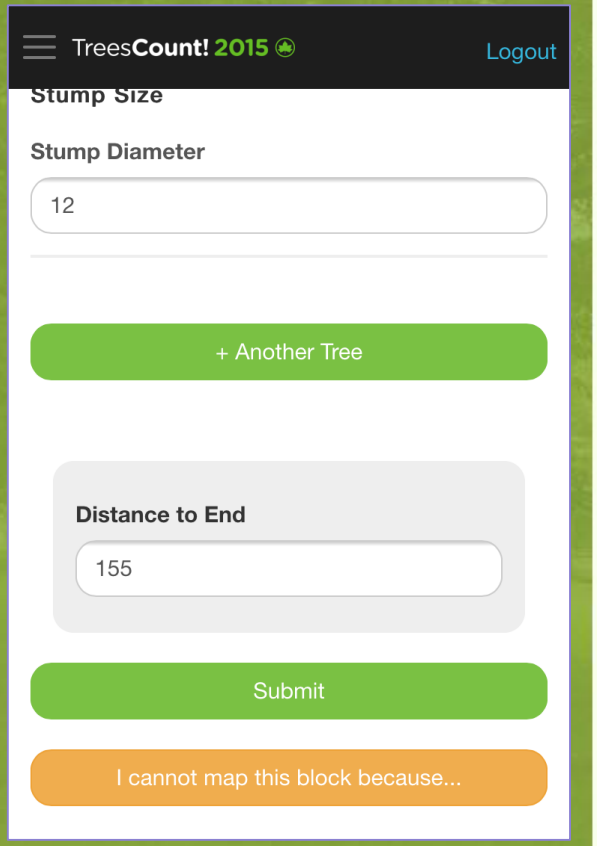

TreesCount! 2015
Logout
111TH STREET
42ND AVENUE
© OpenStreetMap contributors, © CartoDB
Select the block edge you would like to map and then choose a starting point.


TreesCount! 2015
Logout
111TH STREET
42ND AVENUE
© OpenStreetMap contributors, © CartoDB
What side of the street are you on?
Left
Right
Next


TreesCount! 2015
Logout
Treecorder
No Trees On This Block
Tree 1
Measurements
Distance to Tree
47.6
Location of Tree Bed
Along the curb
Offset from the curb
Tree Structure
Tree is alive
Tree is dead
Stump < 24"


TreesCount! 2015
Logout
Tree Trunk
Circumference
35
Tree Species
Species Name
American Elm — Ulmus americana
Are you confident in this answer?
Yes
No
Maybe
Perception of Tree Health
Good
Fair
Poor


TreesCount! 2015
Logout
Tree Problems
No Problems
Root problems
Sidewalk or stones
Metal grates
Other
Trunk problems
Wires or rope
Lights
Other
Branch problems
Lights or wires
Sneakers
Other
+ Another Tree


TreesCount! 2015
Logout
Stump Size
Stump Diameter
12
+ Another Tree
Distance to End
155
Submit
I cannot map this block because...

TREES COUNT 2015

Individual Activity Report

Results for: Deb

Borough(s) surveyed: Brooklyn

18	8	1	0.6
Trees counted	Species counted	Events attended	Miles walked

What five species did you see most often?

London planetree	6
swamp white oak	4
silver linden	2
northern red oak	2
pin oak	1

How big were the trees that you surveyed?

8	Small (0-6 in)	Medium (7-18 in)	5
3	Large (19-30 in)	X- Large (31+ in)	2

What else did you encounter?

Stumps	0
Tree guards	4
Damaged Sidewalk	4
Sidewalk/stones on roots	2
Metal grates	0
Wires/ropes on trunk	0
Lights on trunk	0
Lights/wires on branch	0
Sneakers on branch	0

Encouraging Public Involvement

- Personalized activity reports
- Regular updates on the census
- Incentives and learning opportunities

New York City Street Tree Map

Explore and Care For NYC's Urban Forest

NYC Parks

Home | My ♥ Trees | Learn | Groups | Log in or Register

Zoom to Location | Address or Zip

Share | Tweet | Favorite | Report Problem

Littleleaf Linden

Tilia cordata

Species Map and Details

ID Number: 329817

Trunk Diameter: 25 inches

Suggest an Edit

Closest Address

264 EAST BROADWAY, NEW YORK, NY 10002

Map Key: Tree marker color indicates species. Marker size indicates trunk diameter. Click on marker for full tree details.

Report Tree Missing From Map

How Do I Get Started?

- Meet with your coworkers and stakeholders to discuss data needs
- Create a plan for gathering and maintaining needed data (tree inventory, planting plans, tree care actions, etc)
- Advocate for city agencies to release data related to your mission
- Contact the OpenDataVote team if you would like to run a similar event in your city - https://www.opendatavote.org/
- Contact your city's open data portal if there is one or consider starting one using a toolkit such as CKAN or Socrata
- Explore various recommendations for data collection

- Explores how technology can be used to support the long-term systematic monitoring of urban trees
- Includes notes on several existing data collection tools
- Recommends data models and management plans
- Available on Treesearch at https://www.treesearch.fs.fed.us/pubs/50926

Urban Tree Monitoring Protocol

- Standardized protocol for tree data collection to support longitudinal studies of urban trees
- Protocol includes a Minimum Data Set and four Supplemental Data Sets (site, tree, management, community)
- Field guide available for the Minimum Data Set at www.urbantreegrowth.org