

USDA Forest Service

# URBANFOREST CONNECTIONS

*webinar series*

Second Wednesdays | 1:00 – 2:15 pm ET

[www.fs.fed.us/research/urban-webinars](http://www.fs.fed.us/research/urban-webinars)



Forest Service  
Urban Natural Resources Stewardship

USDA is an equal opportunity provider and employer.



# THE GREEN HEART PROJECT: STUDYING THE IMPACTS OF TREES AND GREEN SPACE ON CARDIOVASCULAR HEALTH



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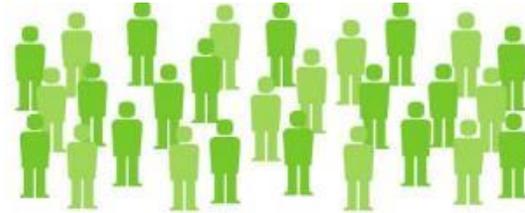
# The Green Heart Project

Louisville, Kentucky

Christopher Chandler, ISA  
KY Urban Program Conservation Director  
The Nature Conservancy



# The Nature Conservancy

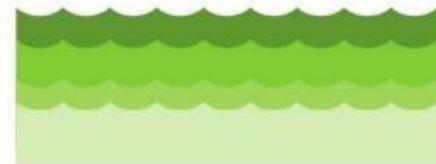


**1MM+**  
active members

**600+** scientists  
**3,700** employees



**1,400**  
preserves  
managed



**5,000**  
river miles protected



**50**  
U.S. state chapters  
**69**  
countries



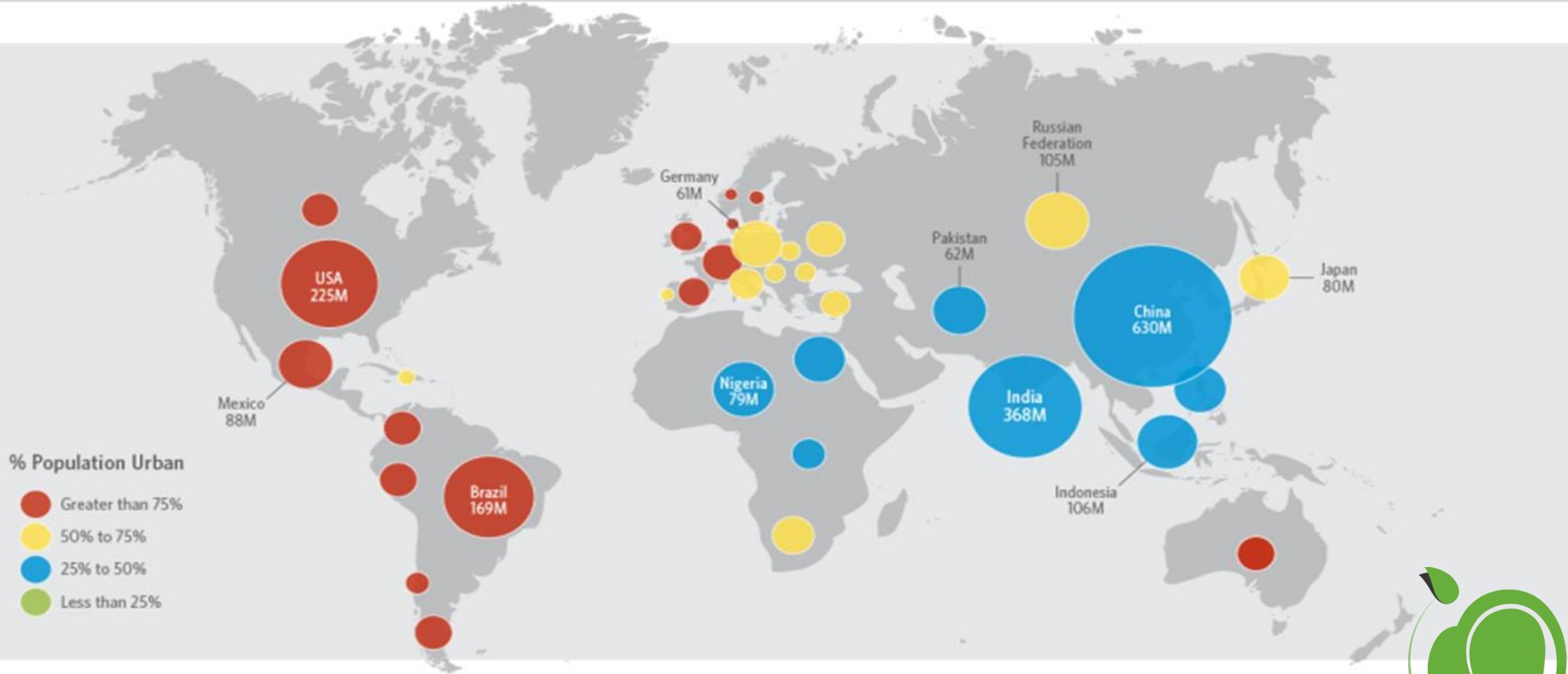
**120MM**  
acres of land  
protected



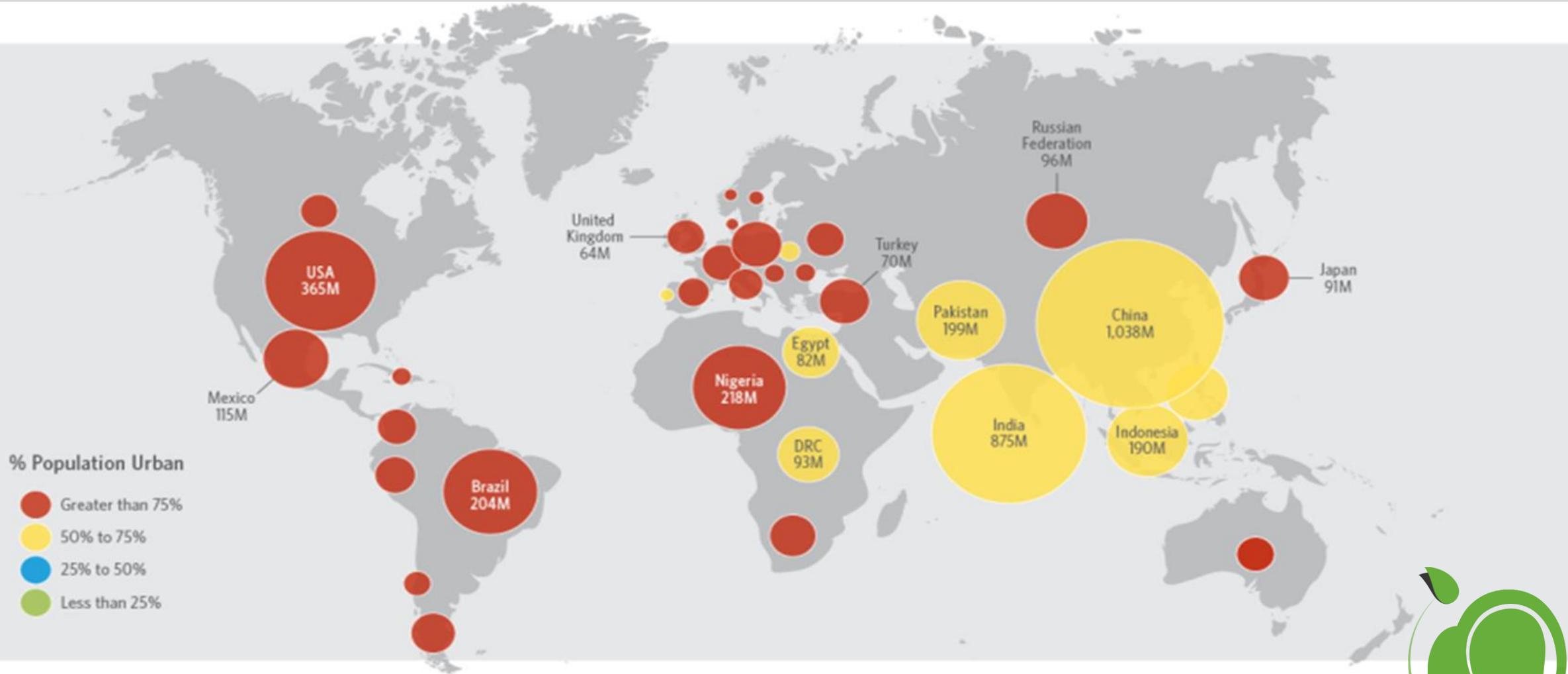
**100**  
Marine conservation  
projects in 21 countries &  
all U.S. coastal states



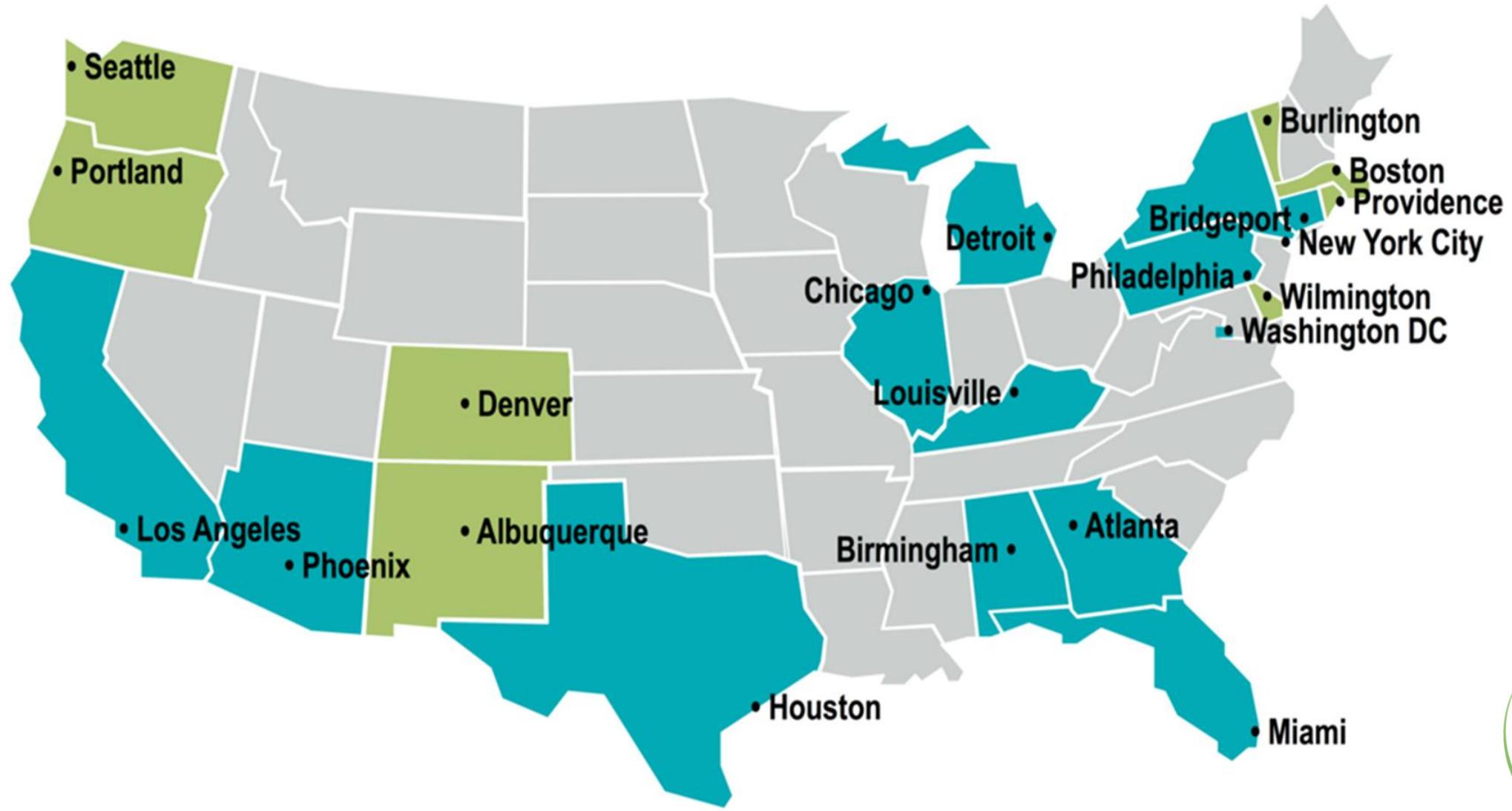
# GREEN HEART | THE WORLD IS URBANIZING | 2010



# GREEN HEART | THE WORLD IS URBANIZING | 2050



# GREEN HEART | THE CITIES NETWORK



# GREEN HEART | WHY LOUISVILLE?

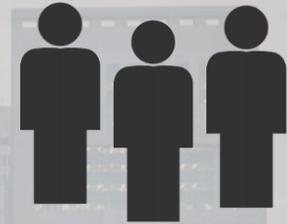


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Grade F  
American Lung  
Association  
6 years running



Losing 54,000 trees  
yearly  
Development  
Pests  
Age



Leading experts  
Community  
support



# GREEN HEART | A LONGITUDINAL STUDY

**Improving Air Quality**



**Better Health Outcomes**

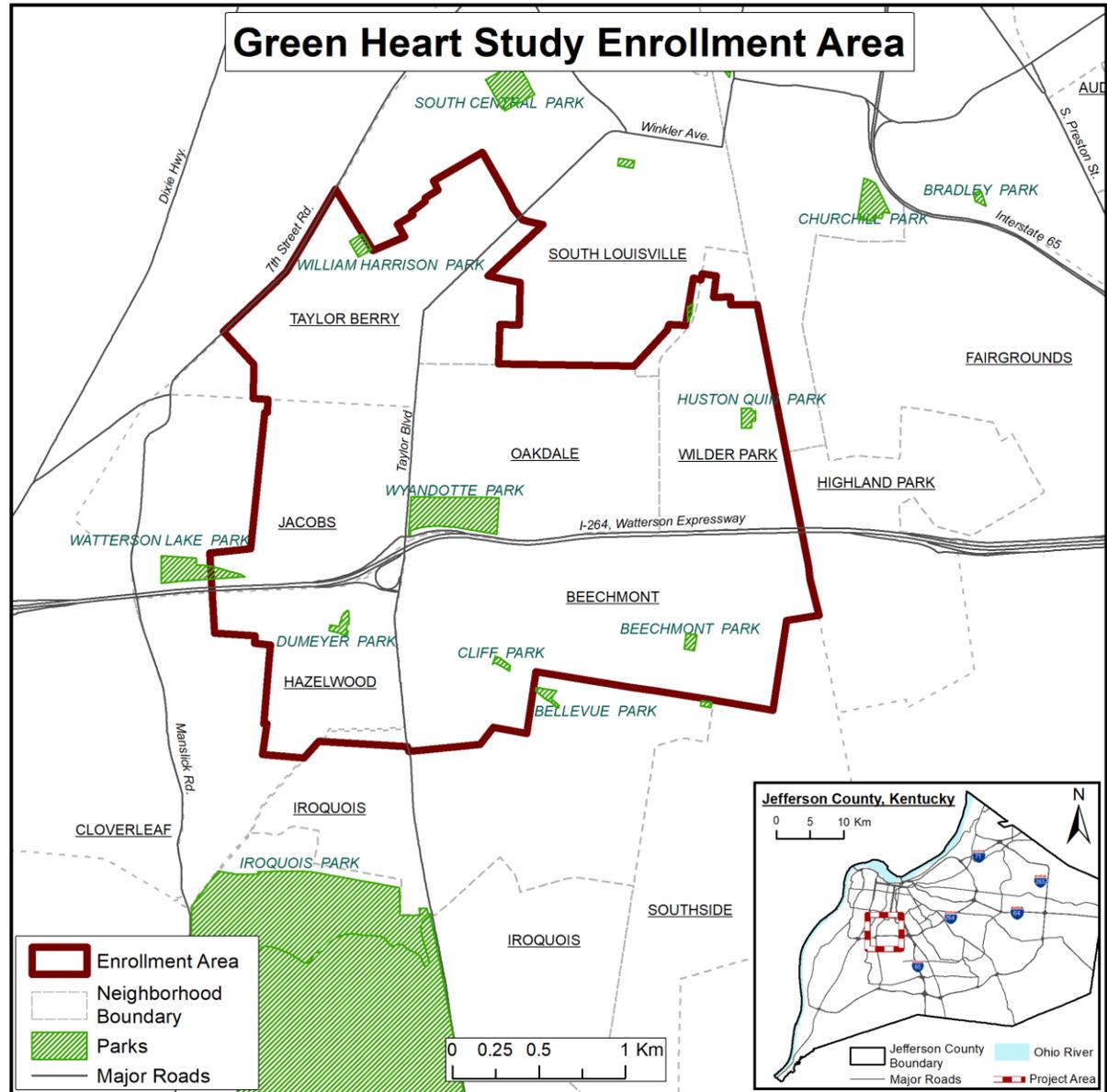


# GREEN HEART | THE PROJECT AREA

22,000 residents across parts of 4 neighborhoods

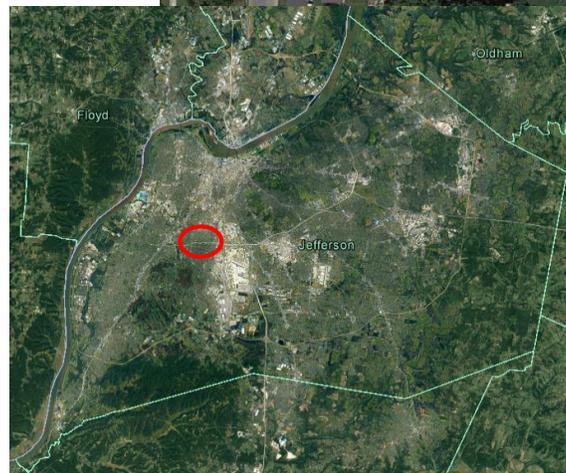
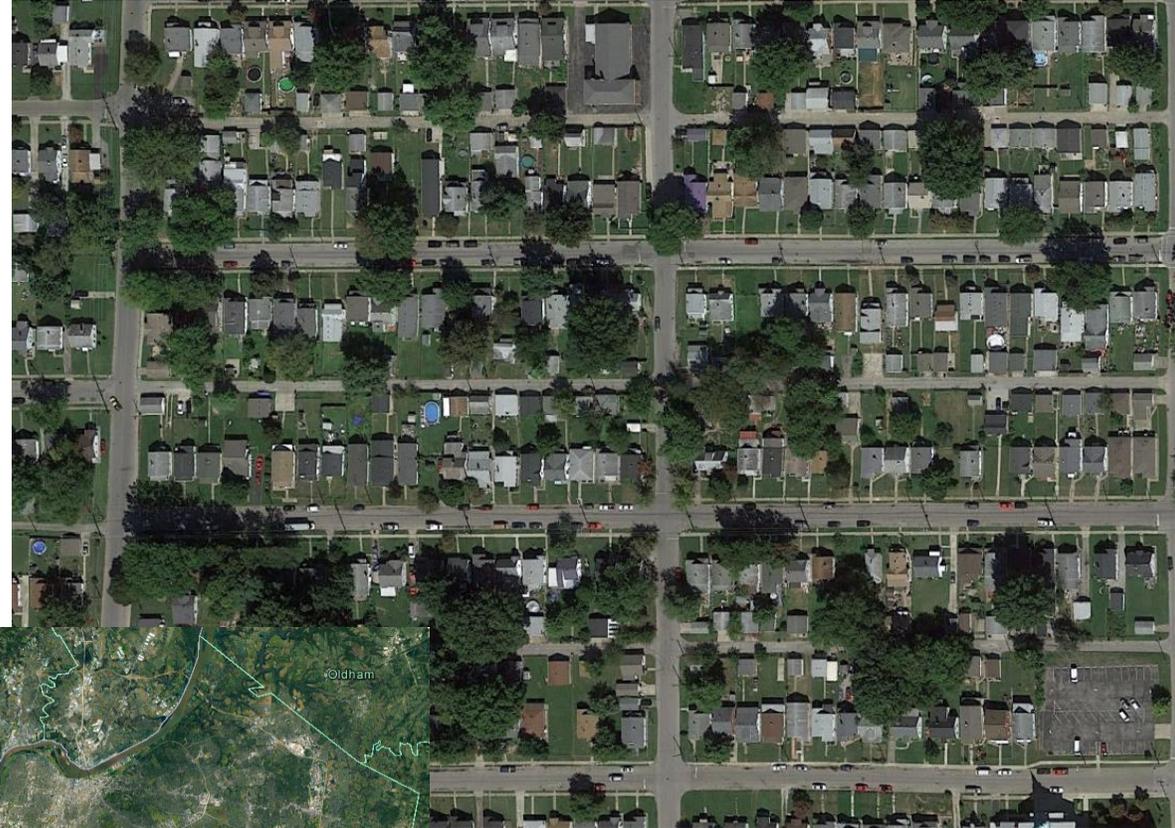
8,000 trees will be planted in the “greening” area

700 people will take part in clinical trial, from project and control area combined



# Jacobs + Oakdale Neighborhoods

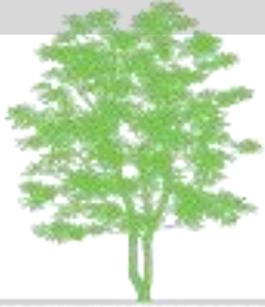
- 22,000 Residents
- 15% African American
- 1.5% Hispanic
- Household Income: 27,300
- 2000 acres
- 25% Existing Canopy



GREEN HEART | **Feasibility**



# GREEN HEART | TREES AS BIOFILTERS



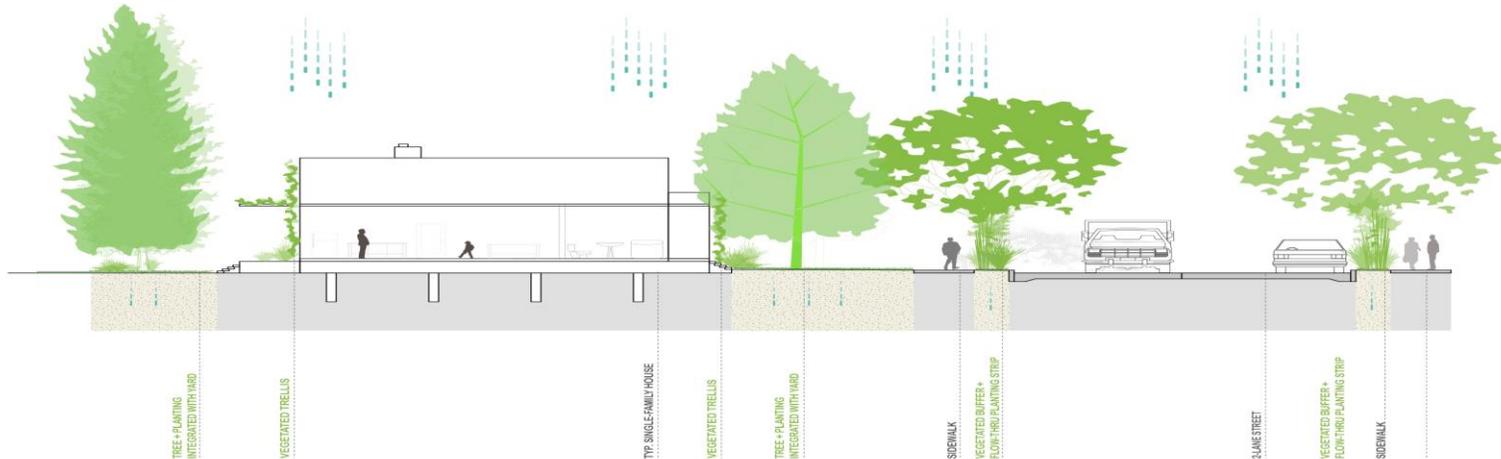
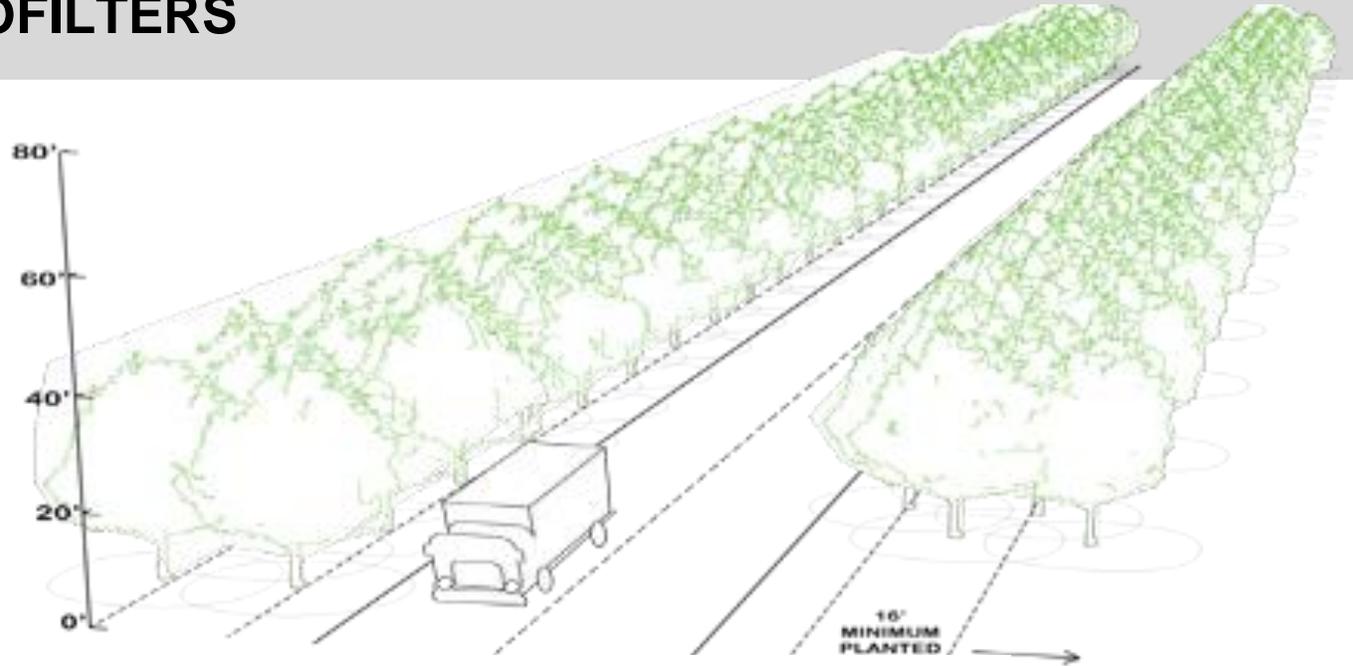
A TREE WITH 40-60% POROSITY IS AN IDEAL TREE TYPE



15' MINIMUM PLANTED WIDTH



A STAGGERED PLAN OR CREATES A DENSE VEG



TREE-PLANTING INTEGRATED WITH YARD

VEGETATED TRELLIS

TYP. SINGLE-FAMILY HOUSE

VEGETATED TRELLIS

TREE-PLANTING INTEGRATED WITH YARD

SIDEWALK

VEGETATED BUFFER + FLOW-THRU PLANTING STRIP

PLANE STREET

VEGETATED BUFFER + FLOW-THRU PLANTING STRIP

SIDEWALK



# GREEN HEART | WHAT WE NEED TO DO NEXT

**Build Community Support**



**Monitor baseline: air, health, environs**



**Plant 8,000 trees**



**Transform Louisville!**



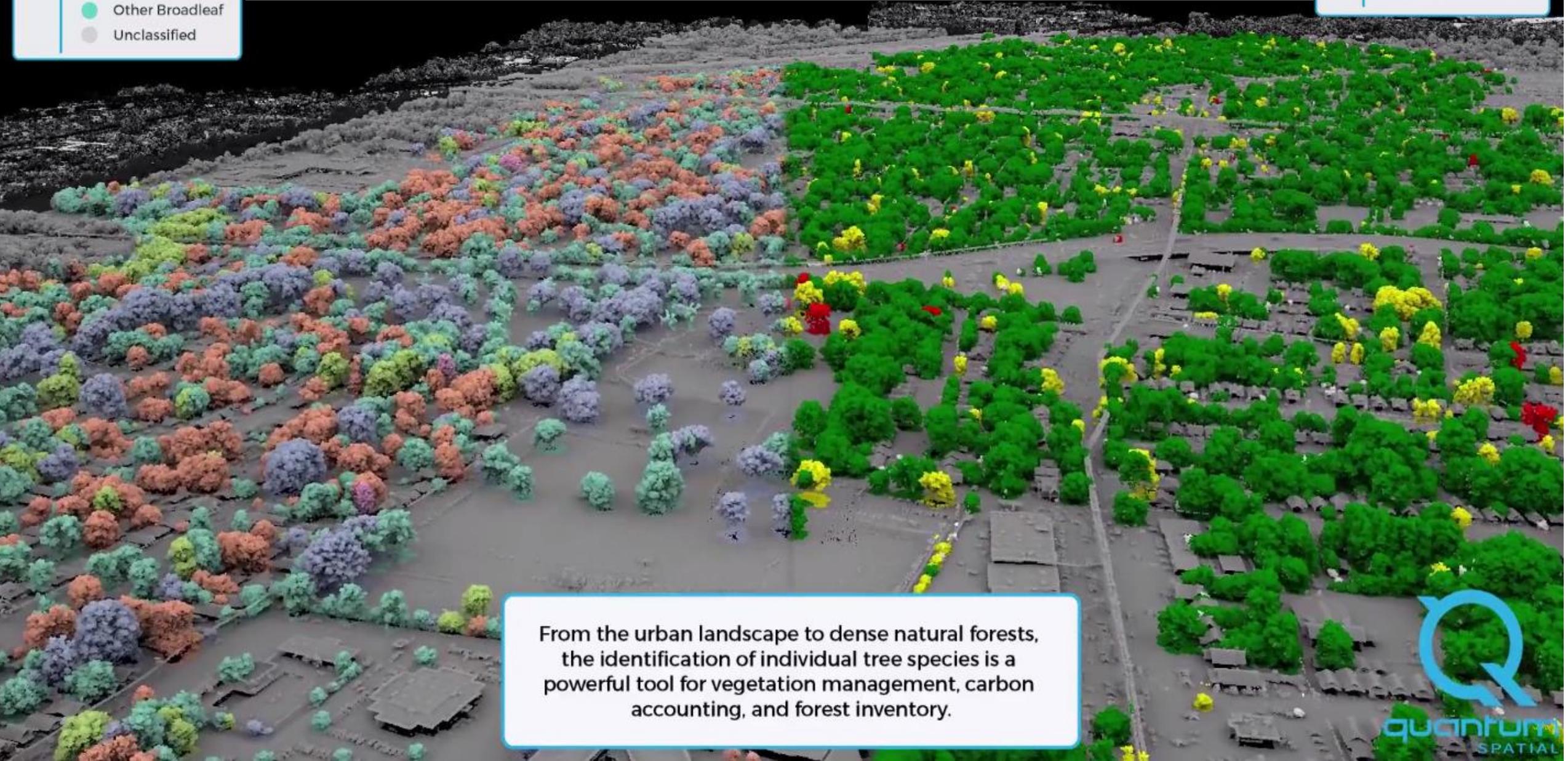
# GREEN HEART | Feasibility



- Tree Type
- Ash
  - Oak
  - Maple
  - Conifer
  - Other Broadleaf
  - Unclassified



- Tree Canopy Health
- Very Stressed
  - Stressed
  - Fair to Healthy
  - Not Assessed



From the urban landscape to dense natural forests, the identification of individual tree species is a powerful tool for vegetation management, carbon accounting, and forest inventory.



GREEN HEART | **Feasibility**



GREEN HEART | **Feasibility**



- August 2015 G4G grant application
- January 2016: Green Heart planning meeting
- July 2016 : Treatment of ash trees in target area
- August 2016: Collection of hyperspectral imagery
- October 2016: G4G planting
- February 2017: Begin community outreach activities
- April 2017: Resubmission of NIEHS grant application
- October 2017: Project launch event and scientific meeting
- February 2018: Green Heart Project NIH R01 application scored at the 5<sup>th</sup> percentile
- March 2018: Begin participant recruitment
- March 2018: Begin baseline air monitoring
- April 2018: Community launch event
- May 2018: Begin participant Enrollment
  
- September 2018: Begin greening activities
  
- October 2019: Complete greening work
  
- April 2021: Begin participant follow-up
- Through 2021: Continuous environmental monitoring



GREEN HEART | THE CORE PARTNERS



GREEN HEART | **BEYOND THE CORE**



Cornell University

**Berkeley**  
UNIVERSITY OF CALIFORNIA



# GREEN HEART | REPLICATING WHAT WORKS

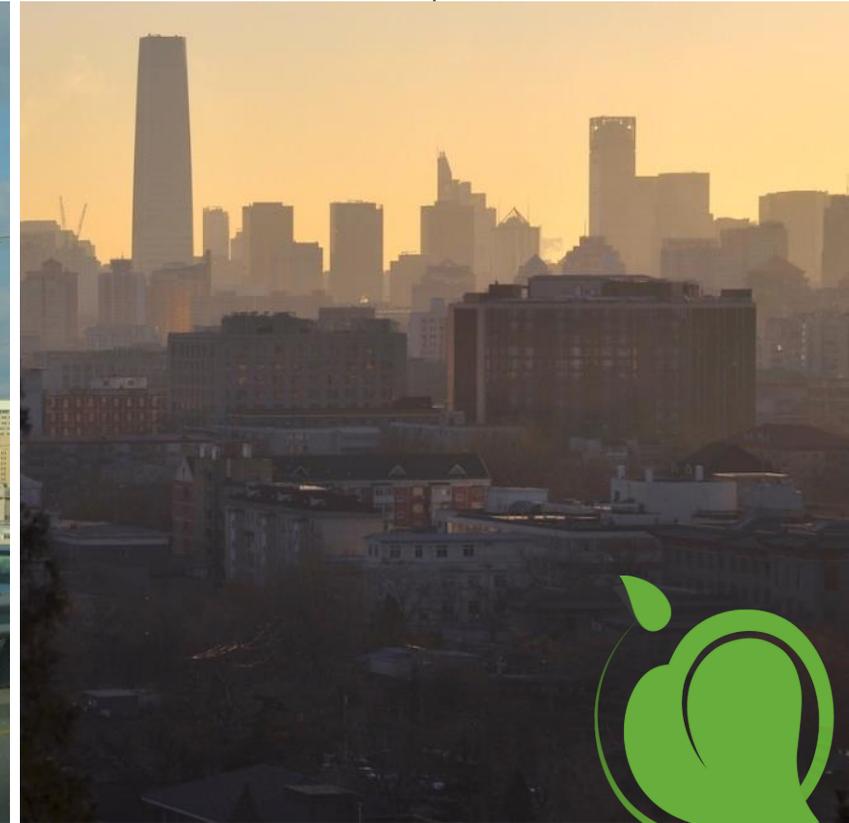
Melbourne



Dallas



Beijing



# Thank You!

Chris Chandler

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UNIVERSITY OF  
**LOUISVILLE**

SUPERFUND RESEARCH CENTER

