

USDA Forest Service

URBAN FOREST CONNECTIONS

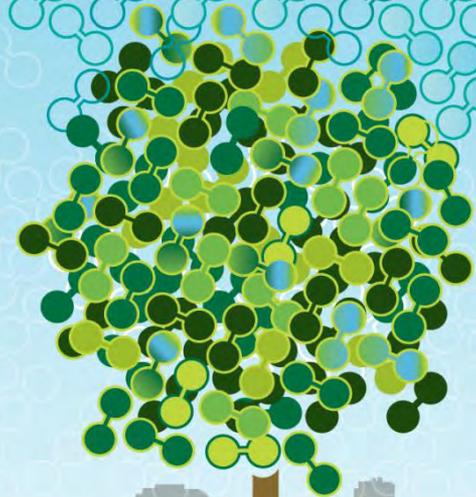
webinar series

Second Wednesdays | 1:00 – 2:15 pm ET

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

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GREEN
CITIES
HEALTHY
COMMUNITIES



Forest Service
Urban Natural Resources Stewardship



URBAN FIA: BRINGING THE NATION'S FOREST CENSUS TO URBAN AREAS



Mark Majewsky

*Supervisory Forester, FIA
USDA Forest Service*



Dick Rideout

*Urban Forestry Partnership
& Policy Specialist
Wisconsin Department of
Natural Resources*



Andrew Stoltman

*Rural and Urban Forest
Inventory Analyst
Wisconsin Department of
Natural Resources*



Chris Edgar

*Forest Resource Analyst
Texas A&M Forest Service*



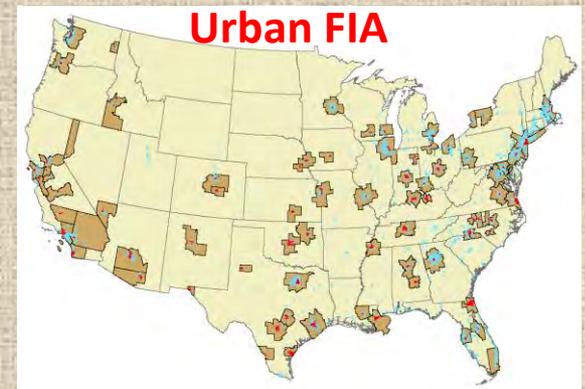
US Forest Service Forest Inventory and Analysis

Urban FIA - One Iconic City at a Time



What is Urban FIA?

- Urban FIA is a strategic level comprehensive national natural resources annual inventory and monitoring system designed to function on both public and private lands in an urban environment.
- Urban FIA is unique in that it's a product of collaboration and the resulting synergy between the rural focused FIA program and i-Tree methods. It has also benefited from lessons learned from past FIA urban inventory pilots. Urban FIA provides data of a known quality, a comparison of plots along the urban to rural gradient, tree merchantability and quality, insect and disease detection, and ecosystem services information.



What is Urban FIA?

It is not just a one-time “snapshot” of our urban forests; it is a continuous inventory, measuring panels of plots annually so the data is constantly being refreshed.



Akihan.hubpages.com



Managewp.com

Why?

- Urban areas home to >80% of population
- Urban forests on front line of service to people
- Urban areas currently cover ~68 million acres (size of CO)
- Projected to cover ~165 million acres by 2060 (size of TX)
- Urban forests not covered by strategic monitoring program
- The 2014 Farm Bill has instructed FIA to inventory and monitor Urban Areas



History of the CORE FIA Program



“make and keep current a comprehensive inventory and analysis of the present and prospective conditions and requirements of the renewable resources of the forest and rangelands of the United States”

- 1928 McSweeney/McNary Act

- 1978 Research Act

Forest Inventory & Analysis



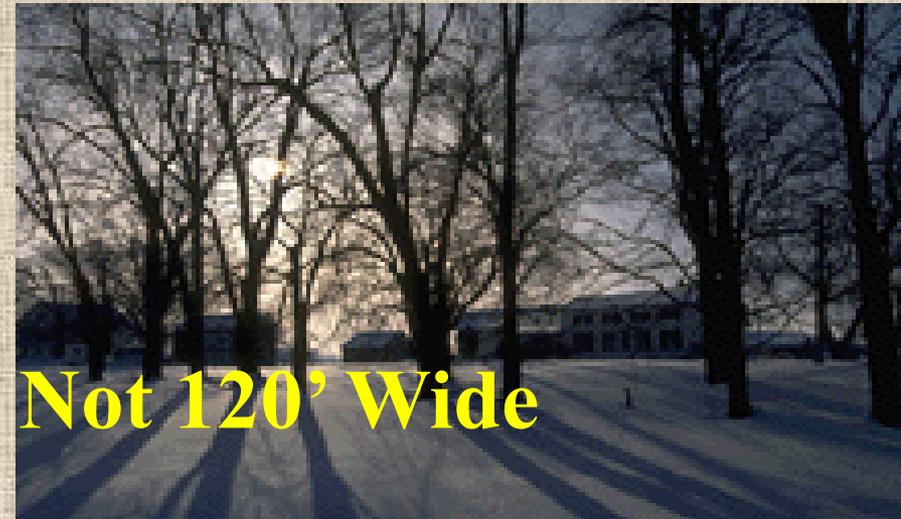
The Nation's Forest Census!

**If there was a tree within
FIA defined forest - We
sampled it !!!**



Trees Falling Through the Gap

Not an Acre



Not 120' Wide



Wrong Land Use

Why Fill the Gap

All trees:

- Sequester Carbon
- Provide Habitat
- Filter Water
- Stabilize Soils
- Provide Biomass
- Enhance Biodiversity
- Create Jobs

Some trees:

- Increase crop yields
- Protect livestock
- Conserve energy
- Improve health and safety

Bottom line:

**We benefit from all trees in both rural
& urban settings**



Shifting our Perspective



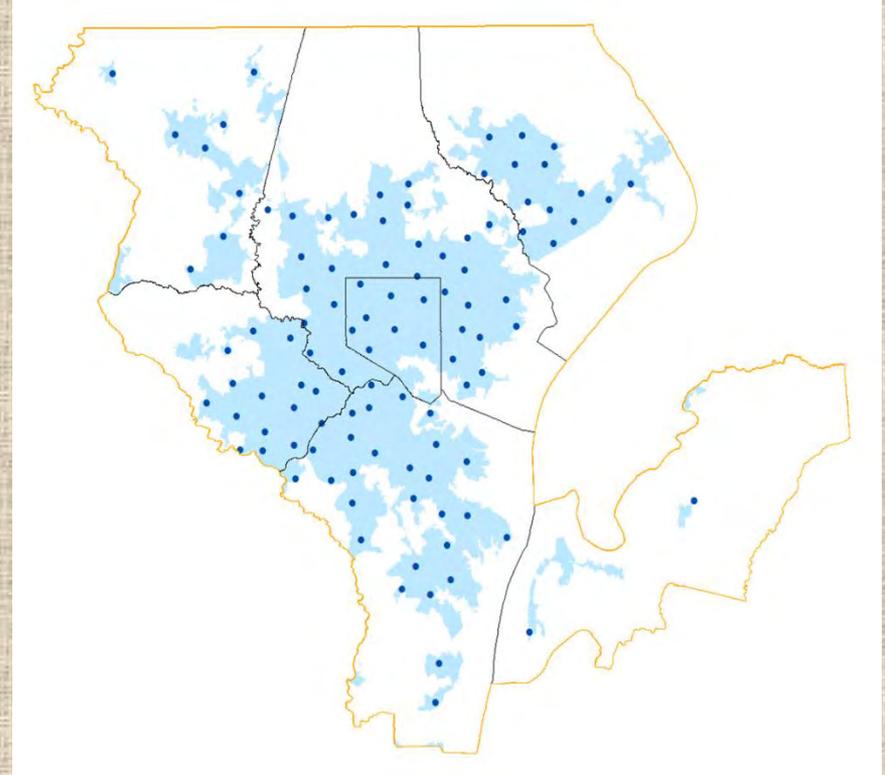
When is a Tree Tallied on the Sample Grid?

Core FIA



- 10% Canopy Cover
- 120' Wide & 1 Acre in Size
- Not Developed for a Non-Forest Use

Urban FIA



- Within Census Defined Urban Areas/
Urban Clusters
- Or within the Census “City Place”
shape file of the Target City.

How do we quantify these benefits?

CITY OF *Salem*
AT YOUR SERVICE

European Beech

(*Fagus sylvatica*)

This 31 inch diameter European beech provides overall benefits of

\$ 138

every year, including:

Stormwater: Intercepting up to 3,238 gallons of stormwater runoff this year.	Health Benefits: Reducing atmospheric carbon by up to 822 pounds.	Property Values: Raising property value up to \$26 this year.
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 *Want to learn more?*
www.oregon.gov/ODF/urbanforests 

EVERY TREE COUNTS

i-Tree Environmental Services Data

Urban forests have a structural value based on the characteristics of the trees themselves.

Urban forests also have functional values based on the ecosystem functions the trees perform.

Large, healthy, long-lived trees provide the greatest structural and functional values.



Urban trees in the Chicago region have the following structural values:

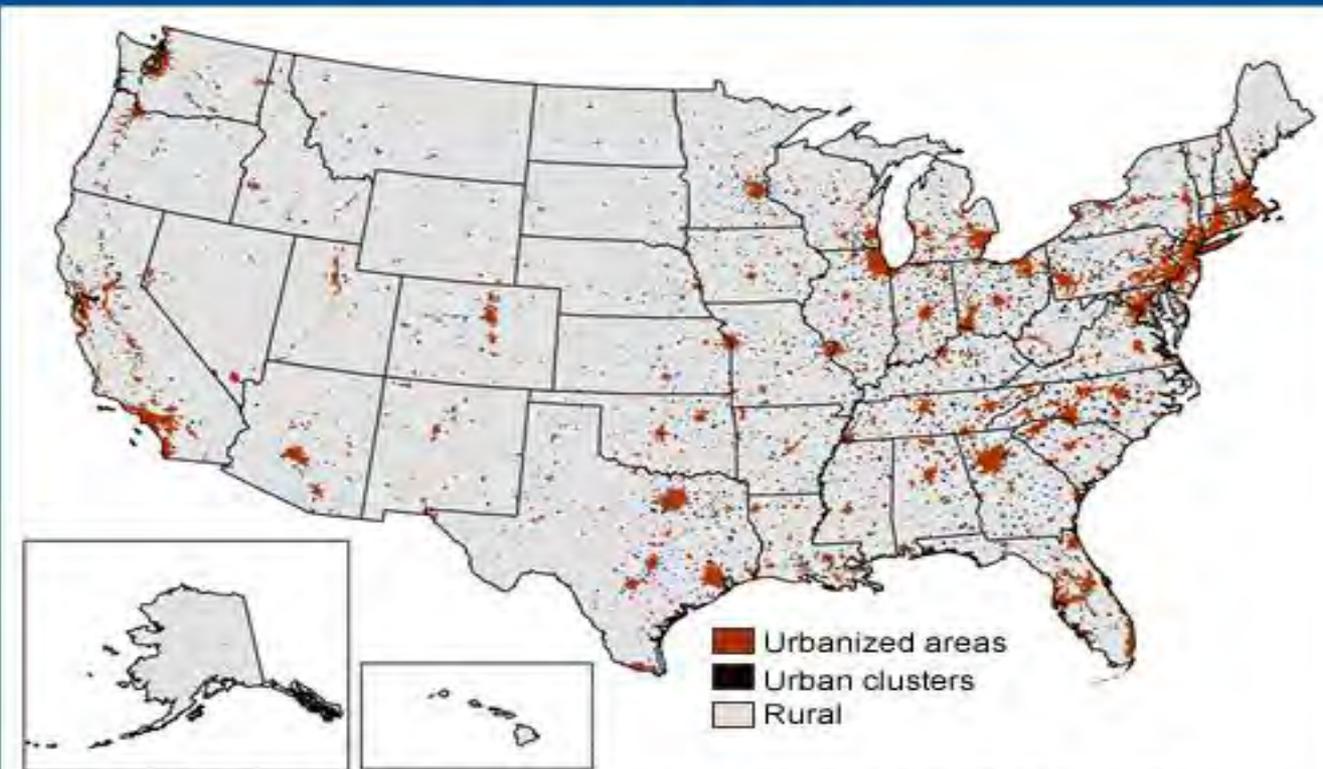
- Compensatory value - \$51.2 billion
- Carbon storage - \$349 million

Urban trees in the Chicago region have the following annual functional values:

- Carbon sequestration - \$14.0 million
- Pollution removal - \$137 million
- Reduced energy costs - \$44.0 million

Urban Areas / Urban Clusters – our Focus

U.S. Census Bureau's urban and rural areas, 2012



Source: USDA, Economic Research Service using data from the U.S. Census Bureau.

One Iconic City at a Time



Urban FIA Implementation Building Blocks

Core Based Statistical Area (CBSA)

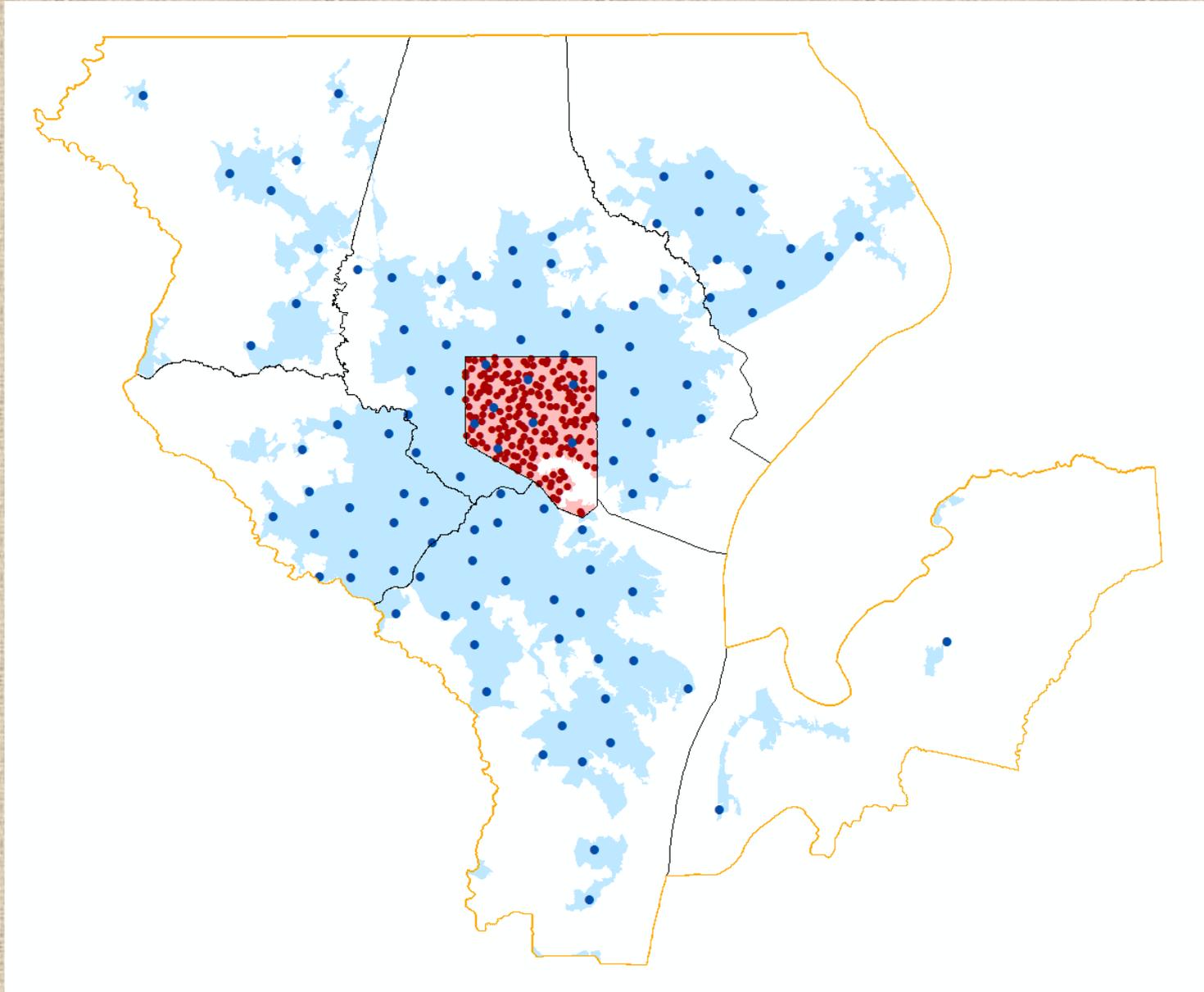
(The Brown line)

- CBSA:
 - Counties surrounding a Hub City
 - Based on Commuting patterns

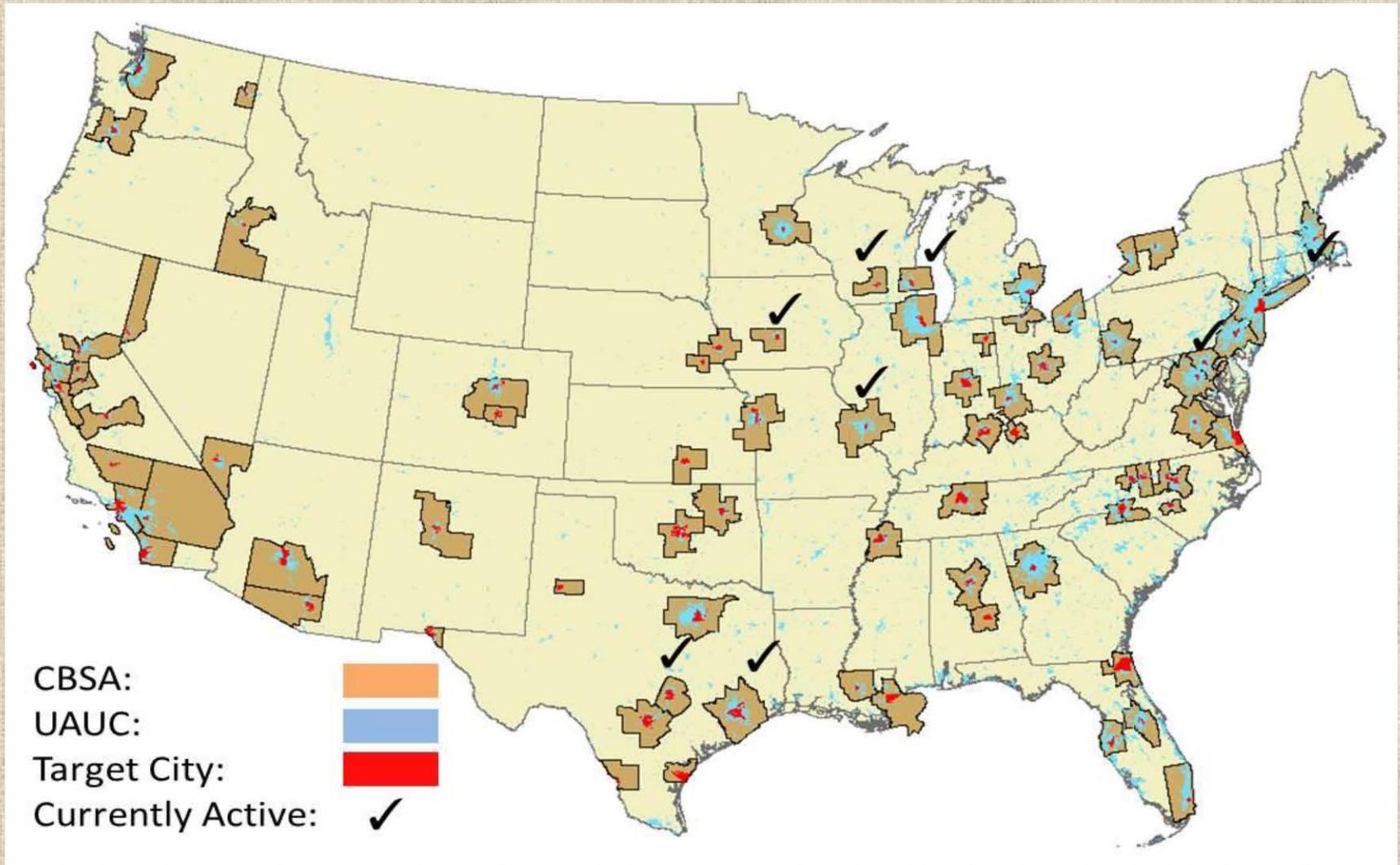


Baltimore, MD Sample

(Baltimore City is the Hub city in red)



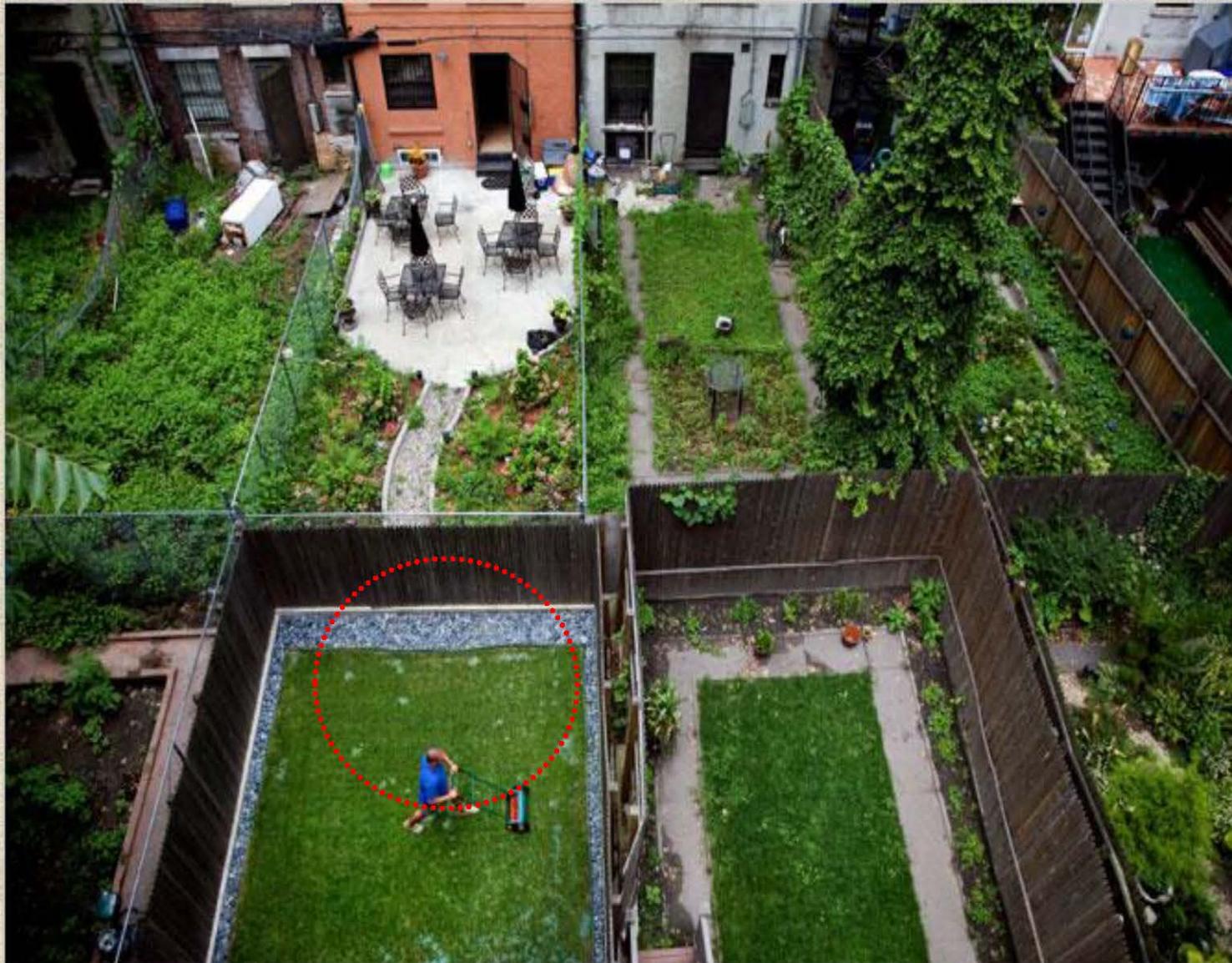
Urban FIA Status



1/6 Acre vs. Traditional FIA



1/6 Acre vs. Traditional FIA



Urban FIA Plot foot print:

-1/6 Acre Subplot, 48' Radius:

tree sample

-Four 6.8' radius Microplots:

sapling sub-sample

Urban Microplots:

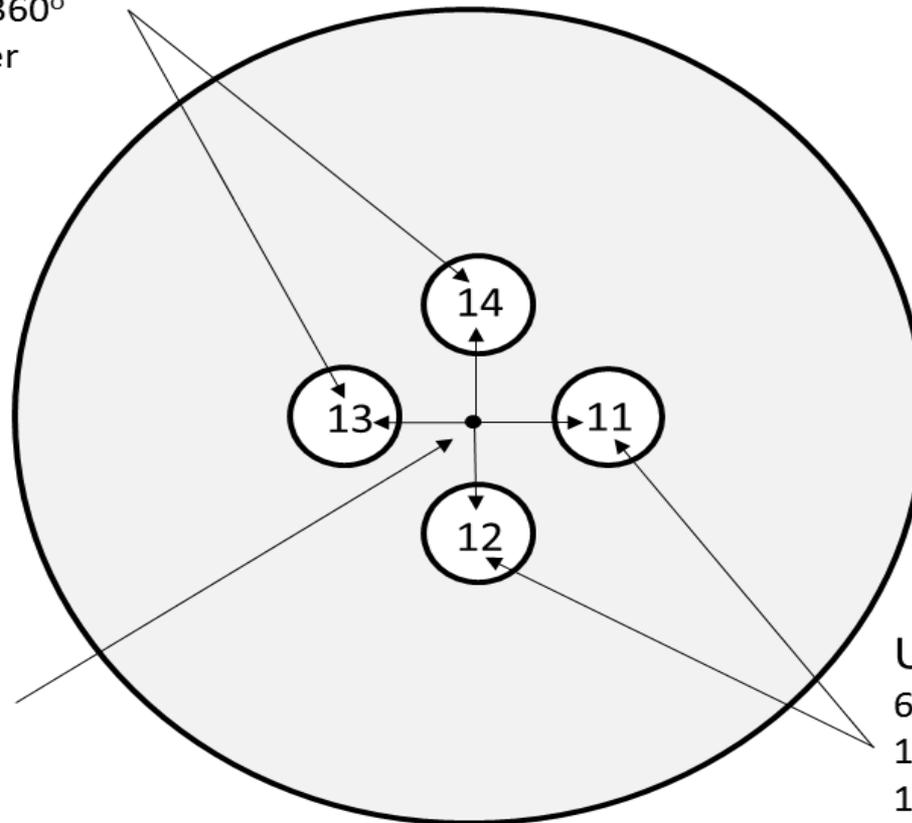
6.8 ft. radius

13 - 12.0 ft. @ 270°

14 - 12.0 ft. @ 360°

From plot center

Urban Plot



Plot Center:

48.0 ft. radius

Urban Microplots:

6.8 ft. radius

11 - 12.0 ft. @ 90°

12 - 12.0 ft. @ 180°

From plot center

A Tree is a Tree



Urban FIA Variables – From CORE FIA

Variables from the CORE program to ensure similar data can be produced in urban areas:



Tree Grade



Growing Stock



Rough Cull



Rotten Cull



FIA Urban variables from i-Tree

Full Suite of i-Tree Eco data:

- Forest cover and leaf area
- Tree characteristics
- Air pollution removal
- Carbon storage and sequestration
- Trees affect on building energy use
- Structural and functional tree values
- Street tree populations
- Potential insect and disease impact...

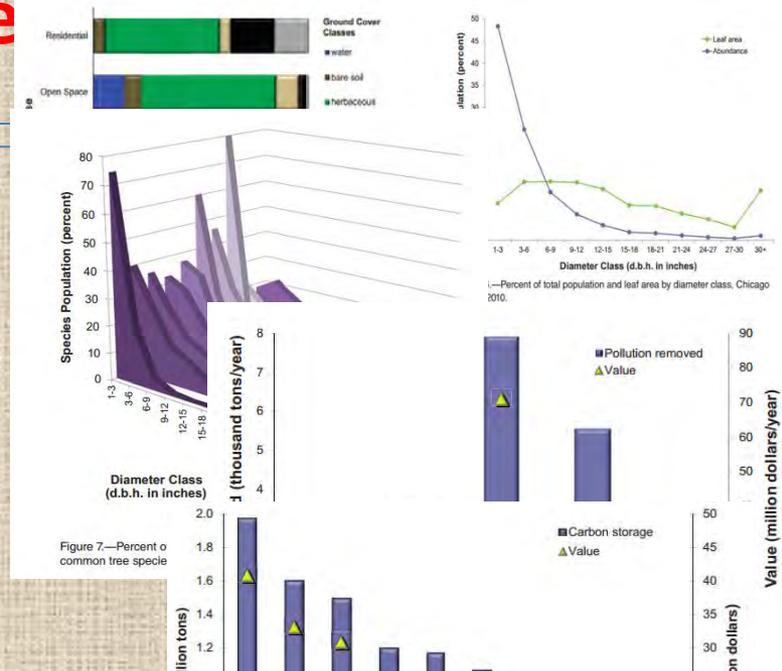
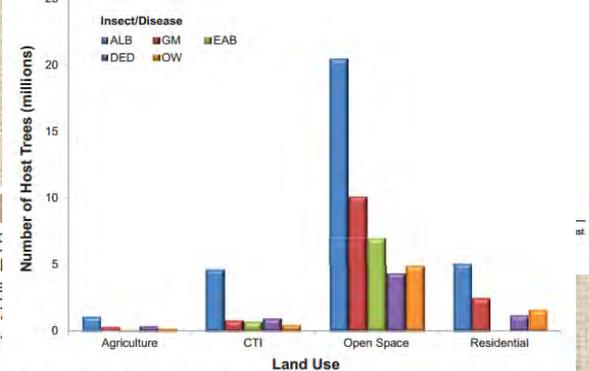


Table 6.—Street trees by land use, Chicago region, 2010

Land Use	Number of Trees	Total Population	Percent of Street Trees
Residential	1,783,100	1.13	
CTI	340,800	0.22	
Open Space	222,300	0.14	
Agriculture	-	0.00	
Total	2,346,200	1.49	100.0

Table 4.—Annual monetary savings^a (\$) in residential energy expenditures during heating and cooling seasons, Chicago region, 2010

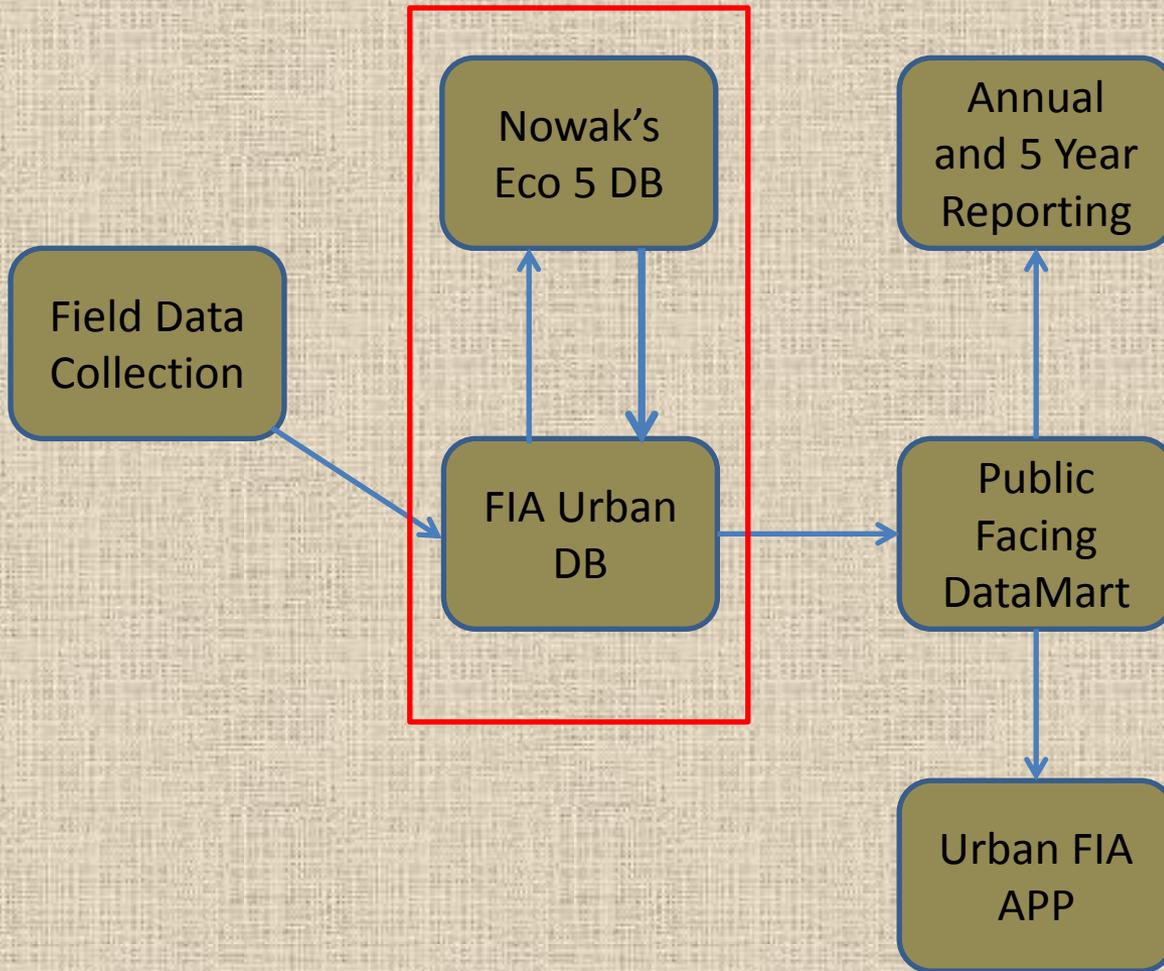
	Heating	Cooling	Total
MBTU ^b	20,165,000	n/a	20,165,000
MWH ^c	1,771,000	22,049,000	23,820,000



Urban FIA Variables



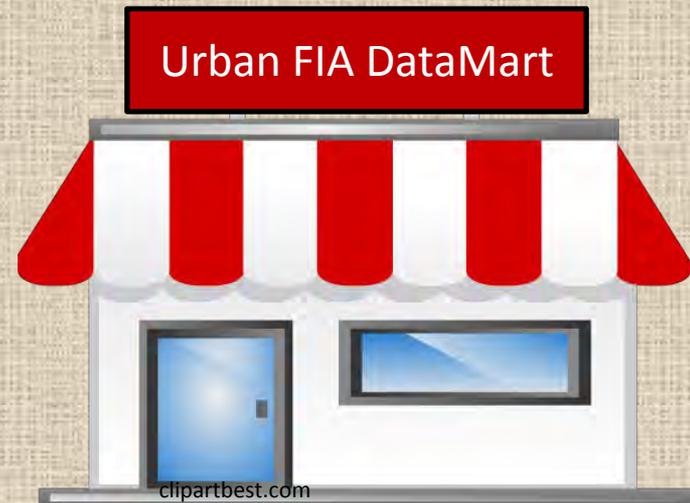
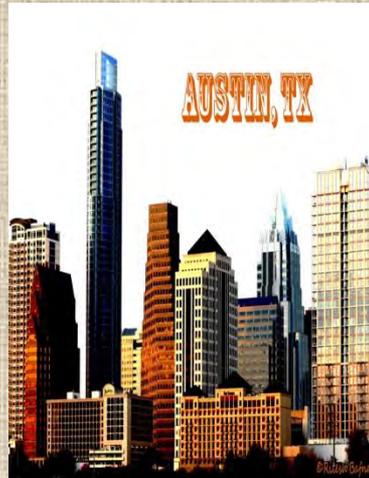
Processing & Reporting



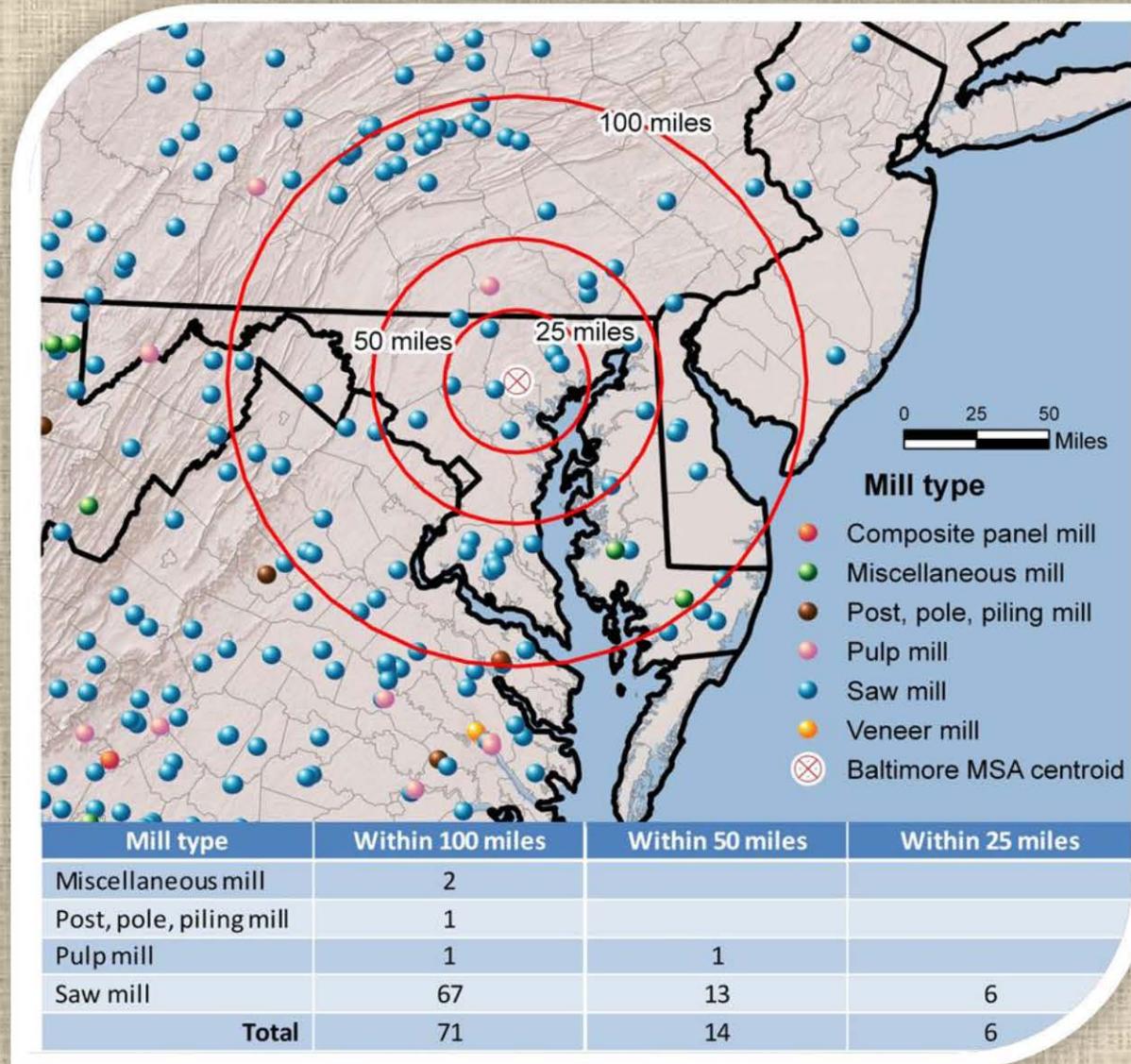
- Progress continues in terms of combining both the historic FIA and i-Tree variables and models into one unified processing system
- Data collected on a 7 year cycle, first data made available after about 4 years.
- Data is updated on an annual basis and once the initial report is released future reports will occur on a 5 year basis using a rolling average of the most recent data.

Reporting and Data Access

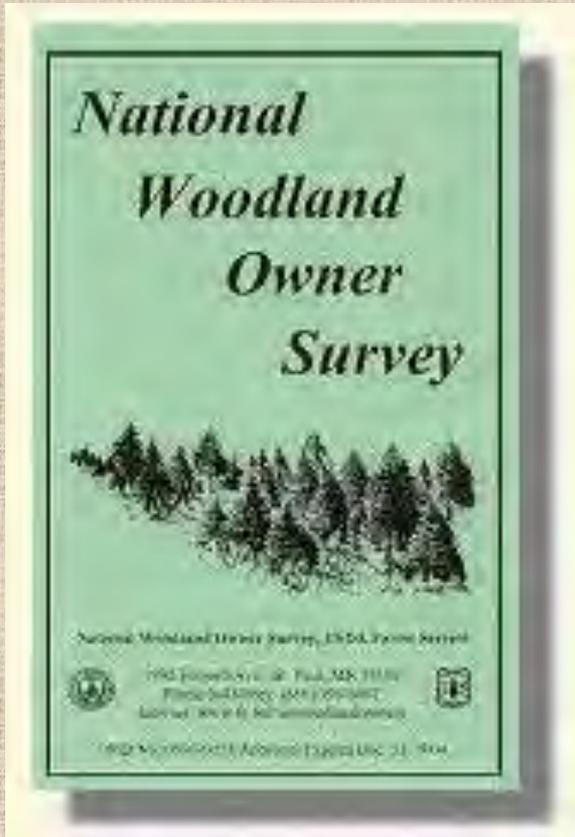
“The Urban Forests of Austin”



Filling the Gap - Urban



Filling the Gap - Urban



The NWOS contacts forest-land owners from across the country to ask them questions about:

The forest land they own

Their reasons for owning it

Their uses of it

Their management of it

Their information needs

Their future intentions for it

Their demographics

Extend NWOS to urban areas

Different focus; different questions; same foundational sampling frame/processing engine

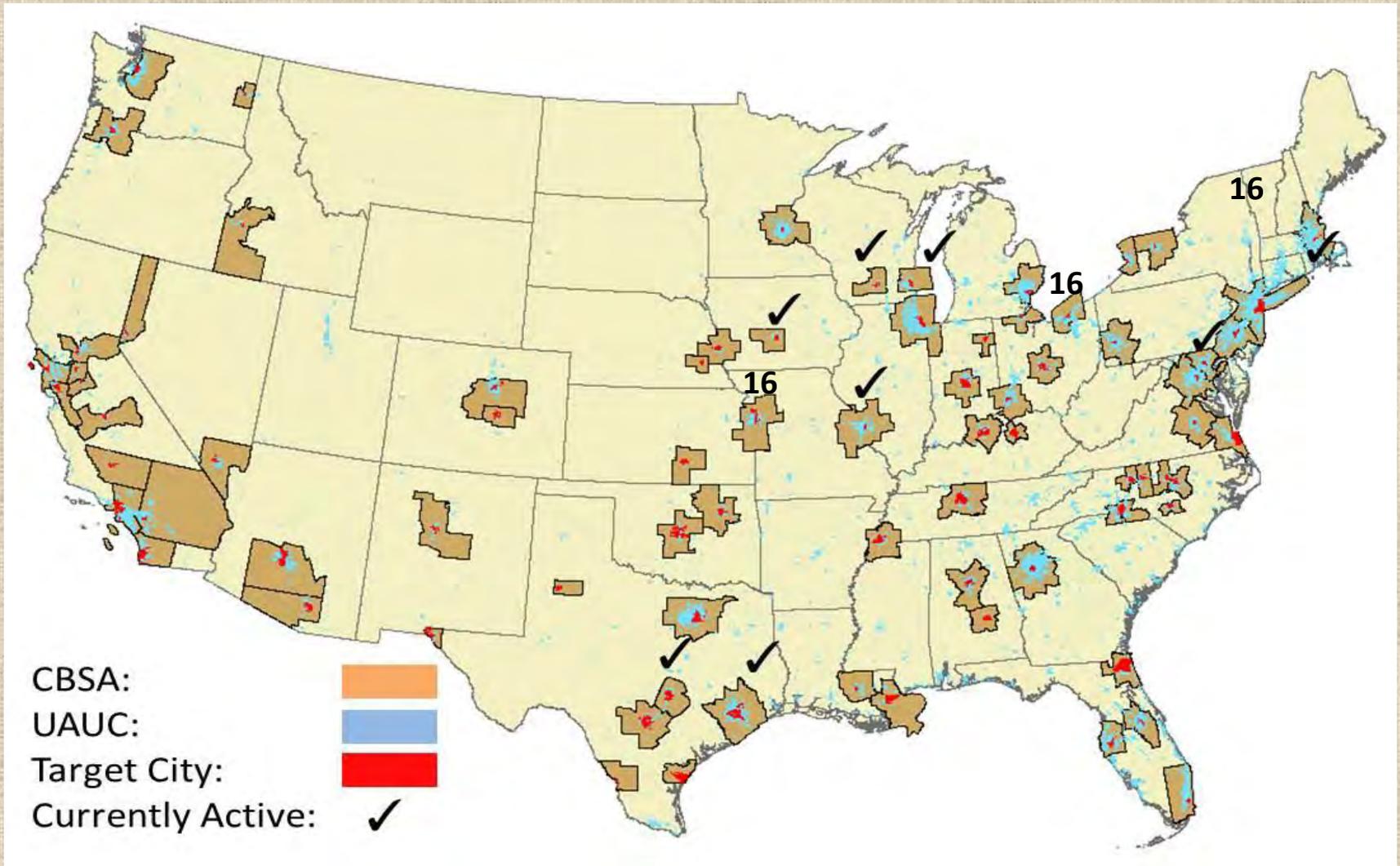


2014

2015



Urban FIA Status



UFIA Implementation



At this point in time we are working with state and local agencies in order to get additional target cites implemented.

Many different staffing models:

- TX State
- RI Mix of state & federal
- MO Agreement / Contract
- WI Contractors
- MD Federal



Benefits of the Urban FIA Program

- Urban FIA will complement existing regional and local urban efforts to provide a cohesive picture of urban area forest conditions in the U.S. with a special emphasis on the city –level data of each of the ~100 target cities in the program.
- Focus on both public and private lands
- Provide strategic level city wide data to city planners and elected officials in order help them make solid budgetary decisions regarding future investment in their city's urban forests.
- Not a one time "snapshot" but a continuous monitoring system, measuring panels of plots annually so that data is constantly being refreshed.
- Robust data collection, data processing, and reporting systems resulting from the combined infrastructure and resources of both the i-Tree and FIA programs as well as state, city, and private cooperators.

Benefits of the Urban FIA Program

- The expanded program will also create a seamless forest inventory that spans the rural to urban gradient. By incorporating elements of both traditions this expanded program will also create a seamless forest inventory that spans the rural to urban gradient making it possible to analyze a suite of variables across the gradient.
- Analysis is not limited to the targeted urban environment under study, but the larger context (landscape) in which that urban area exists.
- Public facing DataMart providing access to raw data
- Solid certification and quality control plans ensuring data of a know quality

For general information regarding UFIA:

Mark Majewsky
Supervisory Forester
USDA FS Northern Research Station
Tofte, MN 55615
mmajewsky@fs.fed.us
651-261-0053

Urban FIA Field Guide & General Information:
<http://www.nrs.fs.fed.us/fia/urban/>

We are always looking for **“willing and able” partners & cooperators**. If you are interested in getting your “Hub City” involved please contact you regional FIA Program Manager:

For more information on Urban FIA
Visit the Urban FIA national web site at http://www.fs.fed.us/urban_FIA or contact one of the offices below:



Washington, DC
703-605-4177

North
St. Paul, MN
651-649-5139

South
Knoxville, TN
865-862-2000

Interior West
Ogden, UT
801-625-5407

Pacific West
Portland, OR
503-808-2034

North:

Dennis May

South:

Bill Burkman

Interior West:

Michael Wilson

Pacific West:

Gretchen Nicholas