



i-Tree User Group Meeting

2011 Partners in Community Forestry Conference



Agenda

🌳 State of i-Tree (30 mins)

- Where is i-Tree today?
- Where is i-Tree going?

🌳 Discussion (30 mins)

- User question & answer period



What is i-Tree?



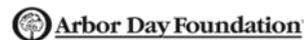
www.itreetools.org



A series of FREE tools to quantify ecosystem services and values from trees (Free support also)



i-Tree is a Cooperative Initiative



What is i-Tree?



www.itreetools.org



Quantify effects for individual trees or tree populations (core programs)



All or any trees



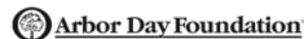
Street trees



Google Maps



i-Tree is a Cooperative Initiative



i-Tree: Quantifies Tree and Forest Resources



www.itreetools.org



Structure

- Number of Trees, species distribution, canopy cover, etc.

Functions / Ecosystem Services

- Energy use
- Air pollution
- Carbon
- Biogenic VOC emissions

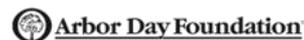
Management needs

- Pest risk
- Tree health
- Exotic/invasive spp.

\$ Value



i-Tree is a
Cooperative
Initiative

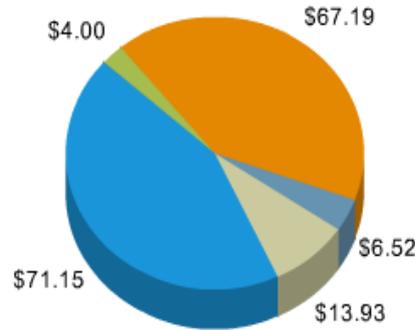




Northern pin oak
Quercus ellipsoidalis

Easily estimates ecosystem services of trees in your yard using Google Maps and i-Tree

- Stormwater
- Air Quality
- Cooling
- CO2
- Heating



Breakdown of your tree's benefits

This 21 inch Northern pin oak provides overall benefits of: \$163 every year.

While some functional benefits of trees are well documented, others are difficult to quantify (e.g., human social and communal health). Trees' specific geography, climate, and interactions with humans and infrastructure is highly variable and makes precise calculations that much more difficult. Given these complexities, the results presented here should be considered initial approximations—a general accounting of the benefits produced by urban street-side plantings.

Benefits of trees do not account for the costs associated with trees' long-term care and maintenance.

If this tree is cared for and grows to 26 inches, it will provide \$195 in annual benefits.



i-Tree is a Cooperative Initiative



What is i-Tree?



www.itreetools.org



Quantify map or cover data or effects



Google Maps



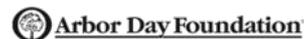
NLCD data



Photo-interpretation



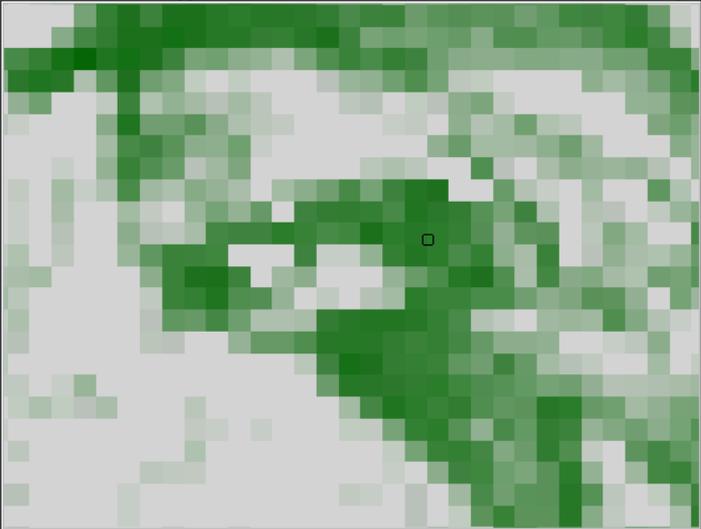
i-Tree is a Cooperative Initiative





Uses national cover maps to estimate and project future benefits

NLCD Percent Tree Canopy



NLCD Statistics

NLCD Image Area:
44,479.0 hectares

Tree Canopy (TC):
7,814.4 hectares
18.4 %

Impervious Cover (IC):
15,197.3 hectares
35.9 %

Developed (all):
34,593.0 hectares
77.8 %
TC: 9.4% IC: 43.9%

Forest (all):
5,675.4 hectares
12.8 %
TC: 75.4% IC: 0%

Wetlands (all - wet1 & 2 tabs):
529.4 hectares
1.2 %
TC: 45.6% IC: 0%

Agriculture (all):
1,356.8 hectares
3.1 %
TC: 2% IC: 0%

Miscellaneous (all):
204.5 hectares
0.5 %
TC: 0.3% IC: 0%

Water:
2,120.0 hectares
4.8 %

i-Tree Vue Google Maps Browser **UL UR LL LR UnDock X**

Map Satellite Terrain Show labels

Land Cover Class 41: Deciduous Forest

Tree Canopy: 81 percent
Impervious Cover: 0 percent
Analysis Map Output: none
UTM X coordinate: 1616700.0
UTM Y coordinate: 1928760.0
Latitude: 38.92979
Longitude: -77.05060
Nearby Address:
Olmstead Walk, Washington, DC 20008, USA



Great Flight Exhibit National Zoological Park Great Apes

Google Imagery ©2011, Map data ©2011 Terms of Use

38.93109, -77.05298 Distance to marker: 824.9ft | 251.4m Bearing: 305.1 deg



i-Tree Canopy

Get started in three easy steps!

One Browse to your project area boundary GIS file. The file must be in ESRI Shapefile format and in lat/long coordinates.

Or

Two Configure the cover classes for your survey.

Three Begin i-Tree Canopy Survey > ?

[Been here before?](#)

Already started an i-Tree Canopy survey?
Load it here and resume your work.



Google

Percent Cover (±SE)

42.9	57.1
±24.7	±28.6

Id	Cover Class	Latitude
1	Tree	-37.82930543236144
2	Tree	-37.81302356330144
3	Tree	-37.81913019363144
4	Non-Tree	-37.82964905605144
5	Non-Tree	-37.81840952395144
6	Non-Tree	-37.82188855427144
7	Non-Tree	-37.81882077 144
8	Tree	-37.78606178650144

Page 1 of 1

Determines % tree cover

- Easy & Fast
- World-wide
- Web-based

What is i-Tree?



www.itreetools.org



Specialized programs

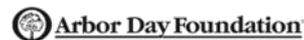


Species selection

Stream flow and quality



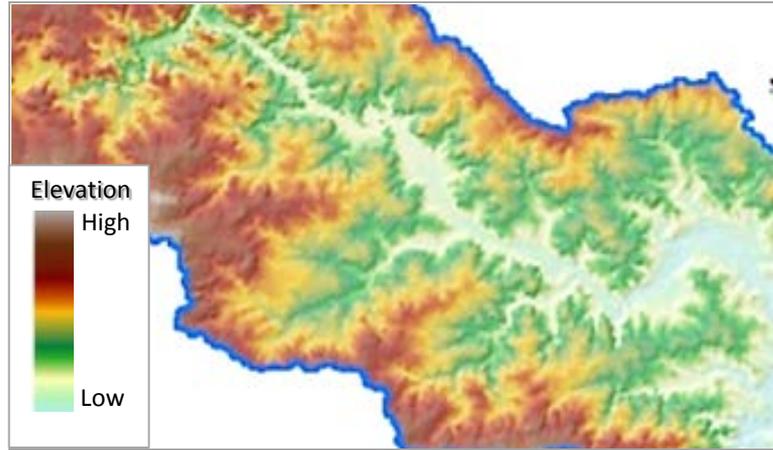
i-Tree is a Cooperative Initiative





**Easily determine
best species for
desired tree
benefits**



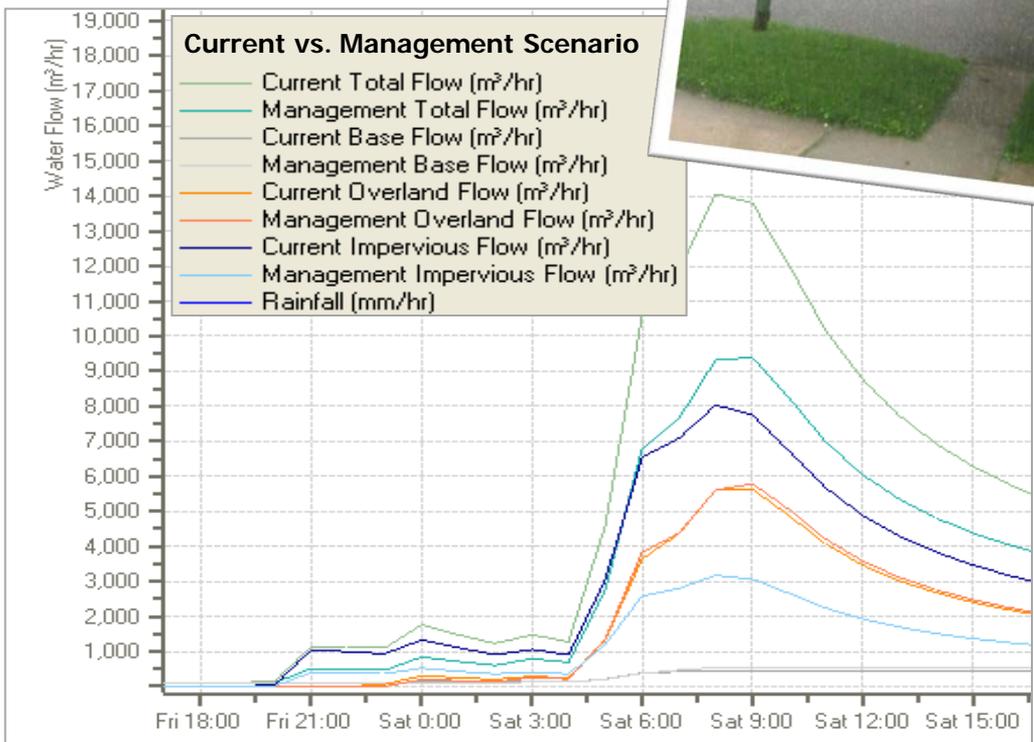


Quantifies effects of:

- 🌳 Tree cover
- 🌳 Impervious cover

on:

- 🌳 Stream flow
- 🌳 Water quality

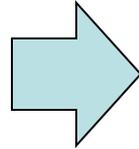


Version 5.0: Spring 2012



 Many new features

 Invasive plant listing



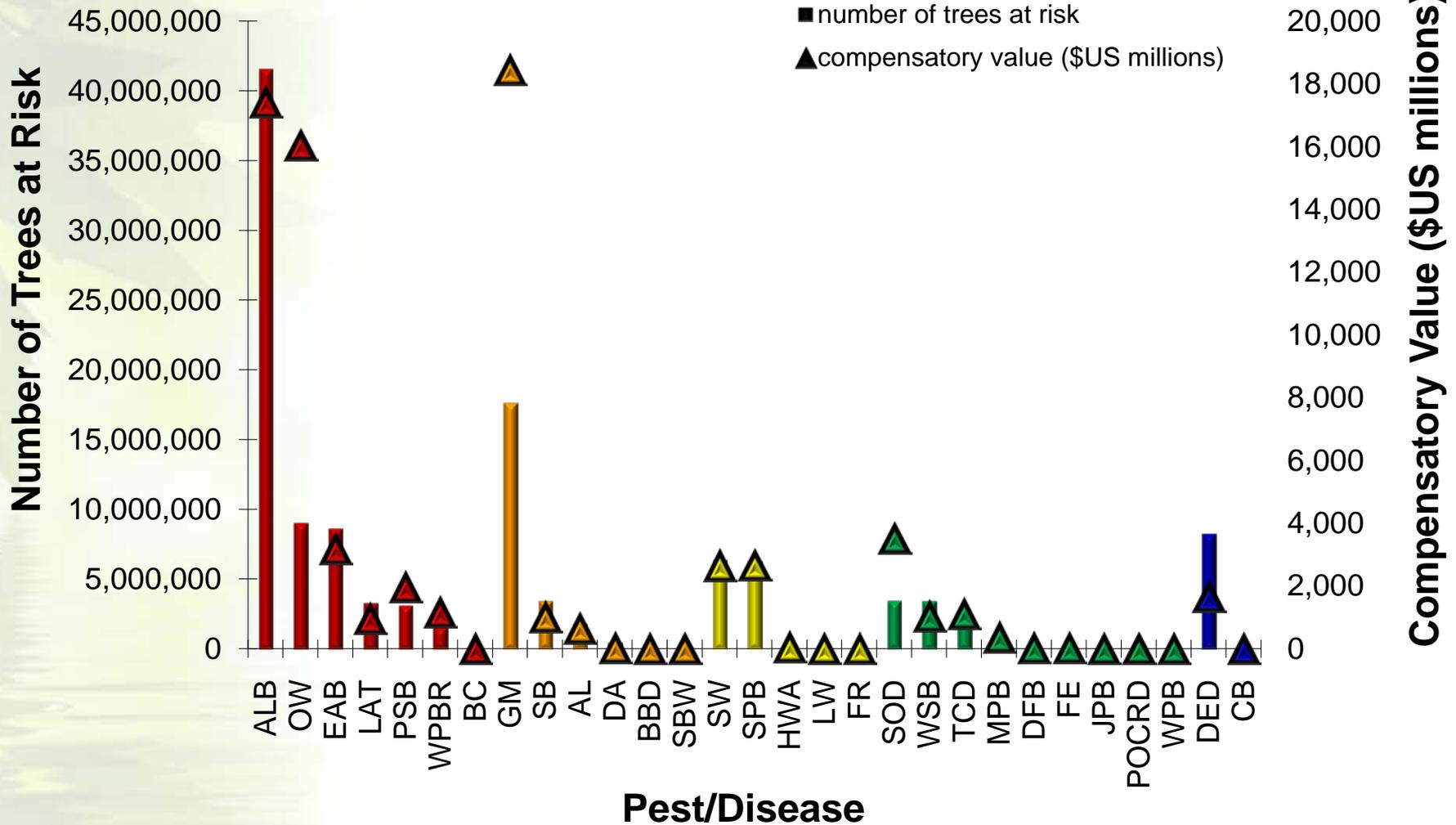
Species listed as invasive or potentially invasive on Illinois or national invasive species lists

Scientific Name	Common Name ^a	% of Pop ^b	% of Leaf Area
<i>Rhamnus cathartica</i>	European buckthorn	28.2	6.55
<i>Lonicera maackii</i>	Amur honeysuckle	2.1	0.48
<i>Robinia pseudoacacia</i>	Black locust	1.9	1.93
<i>Ulmus pumila</i>	Siberian elm	1.4	3.24
<i>Acer platanoides</i>	Norway maple	1.2	3.57
<i>Ailanthus altissima</i>	Tree of heaven	1.2	0.70
<i>Morus alba</i>	White mulberry	1.0	0.84
<i>Acer ginnala</i>	Amur maple	0.5	0.16
<i>Frangula alnus</i>	Glossy buckthorn	0.3	0.09
<i>Picea abies</i>	Norway spruce*	0.2	0.61
<i>Pyrus communis</i>	Common pear*	0.2	0.24
<i>Alnus glutinosa</i>	European alder*	0.2	0.19
<i>Pyrus calleryana</i>	Callery pear	0.2	0.14
<i>Populus alba</i>	White poplar	0.1	0.62
<i>Pseudotsuga menziesii</i>	Douglas fir*	0.1	0.11
<i>Maclura pomifera</i>	Osage orange	0.1	0.11
<i>Elaeagnus umbellata</i>	Autumn olive	0.1	0.09
<i>Prunus cerasifera</i>	Cherry plum*	0.1	0.07
<i>Syringa vulgaris</i>	Common lilac*	0.1	0.01
<i>Euonymus alatus</i>	Winged burningbush	0.1	0.01
<i>Catalpa speciosa</i>	Northern catalpa*	<0.1	0.07
<i>Ulmus parvifolia</i>	Chinese elm*	<0.1	0.03
<i>Phellodendron amurense</i>	Amur corktree*	<0.1	0.02
<i>Elaeagnus angustifolia</i>	Russian olive	<0.1	0.02
<i>Pinus sylvestris</i>	Scotch pine*	<0.1	0.01
<i>Acer palmatum</i>	Japanese maple*	<0.1	0.01
<i>Aesculus hippocastanum</i>	Horsechestnut*	<0.1	0.01
<i>Hibiscus syriacus</i>	Rose-of-sharon*	<0.1	<0.01
<i>Malus pumila</i>	Paradise apple*	<0.1	<0.01
<i>Corylus avellana</i>	European filbert	<0.1	<0.01
<i>Ligustrum vulgare</i>	Common privet	<0.1	<0.01

^a Species is only listed on national invasive species list (*)

^b Percent of total population

New Pest Risk Ratings



Red indicates pest/disease is within Cook County
 Orange indicates pest/disease is within 250 miles of Cook County
 Yellow indicates pest/disease is within 750 miles of Cook County
 Green indicates pest/disease is outside of these ranges
 Blue indicates no data on pest range

i-Tree Eco Random Plot Generator

Load or Draw your project area boundary:



The file must be in ESRI Shapefile format and in lat/long coordinates.

Do you wish to conduct a survey that is:

- Un-stratified
- Stratified

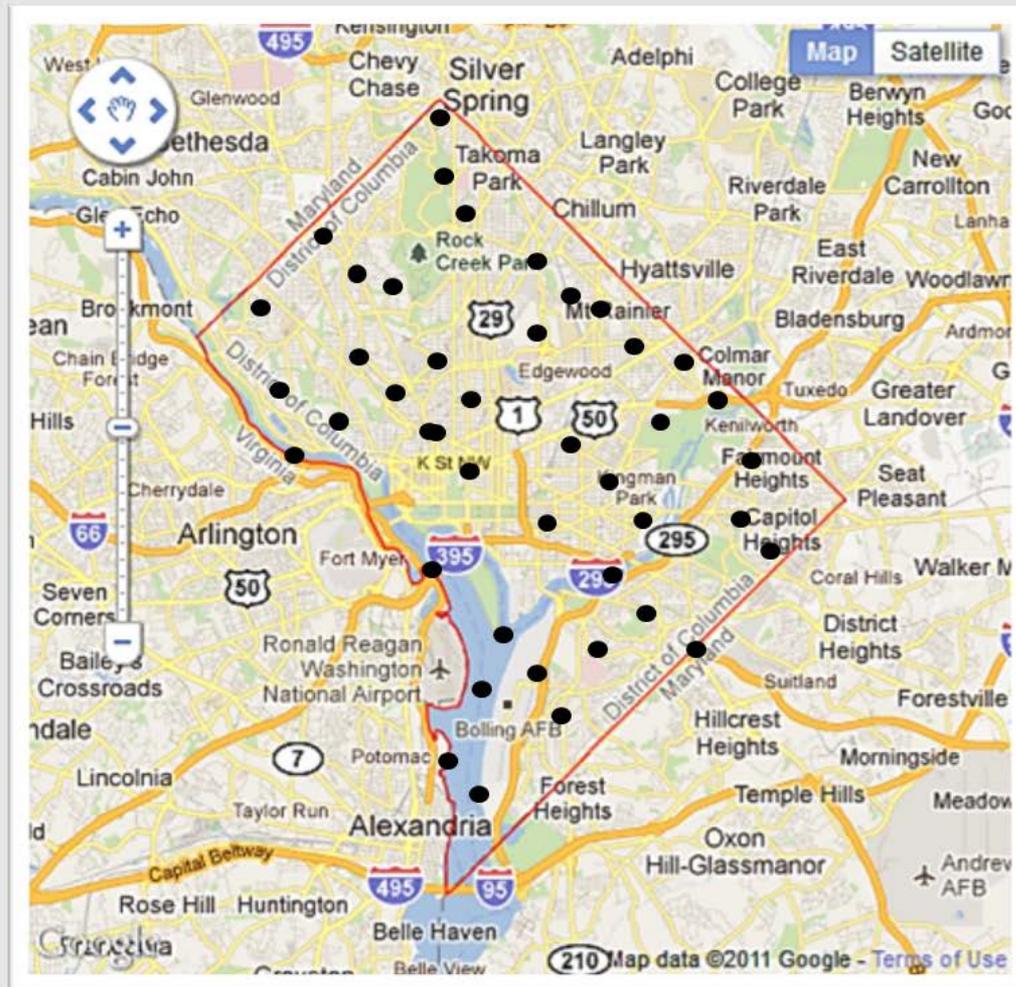
un-stratified = random plots throughout a single boundary area, such as a city or park.

stratified = random plots throughout multiple boundary areas, such as land use across a city

Enter the number of plots:

Select the plot size:

- 1/5 acre 1/5 hectare
- 1/10 acre 1/10 hectare
- 1/20 acre 1/20 hectare
- 1/100 acre 1/100 hectare

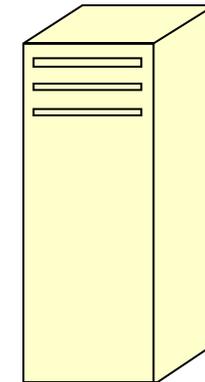
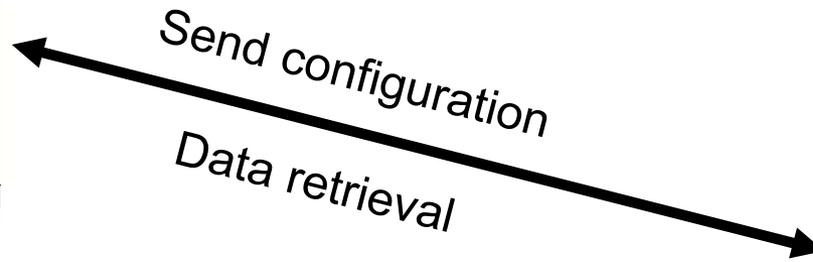
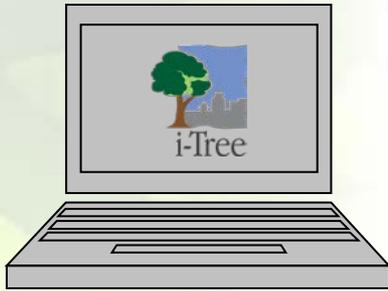


Help

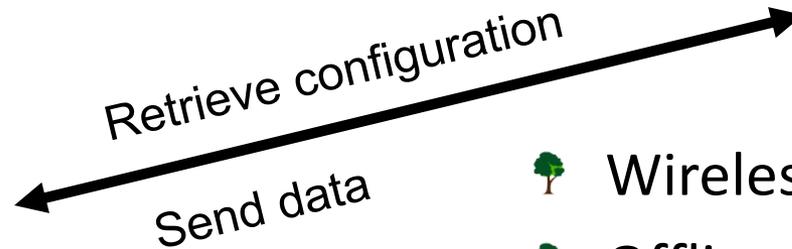
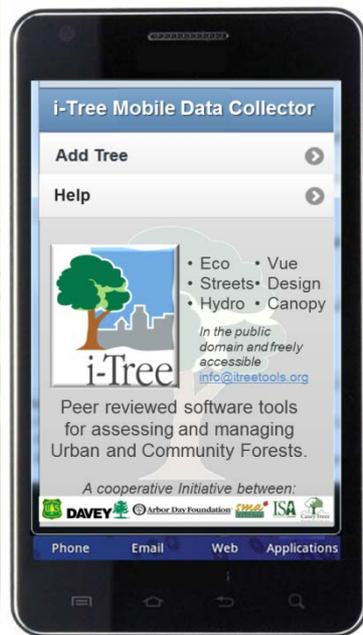
Cancel

Generate Plots

i-Tree Mobile Data Collection



Web Server



-  Wireless retrieval & upload
-  Offline data collection
-  Works on any mobile browser utilizing HTML5

i-Tree Design



 Ideal planting

location

 Transpiration

 Grow-out

 Multiple trees

i-Tree Design Beta Tivoli Way, Sacramento, CA 95819, USA

[Home](#)

Get started with these easy steps:

Enter your tree's species:

Magnolia

Note: If you're looking for a Willow Oak, it's listed as "Oak, Willow". If your tree isn't listed, use the general "Other" listings.

Enter how wide (diameter) your tree is at 4.5 feet above the ground: 15 inches.

Note: This measurement is what foresters call "diameter at breast height".

Enter what type of condition best describes your tree: Excellent

Check here if you would like to evaluate energy effects:

Draw your structure & locate your tree:

Use the drawing tool  above the map to outline your house or building. Be sure to outline "conditioned" living area only; garages and other unheated or uncooled spaces should not be included. When you are finished outlining your building, click on the  button. You can also use  to delete your last point or use  to cancel the entire drawing.

Now, use the tree tool  above the map to locate your tree. Place the marker as close to the base (or center) of the tree as possible. You cancel the tree placement by clicking .

Indicate when your structure was built:

pre-1950

Calculate Benefits

UFORHIC/Pest Detection

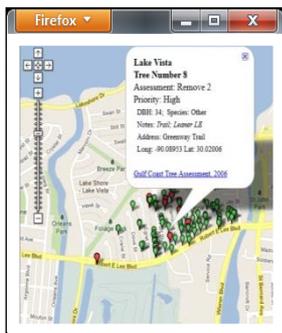


Distributed Tree Inventory & Pest Detection Data

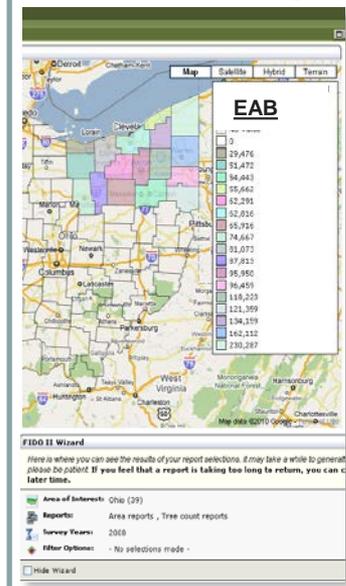


Local Use

No	Month	Saline volume	Reported
1	January	120	30,000
2	February	150	40,000
3	March	85	25,000
No	Month	Saline volume	Reported
4	April	134	40,000
5	May	201	60,000
6	June	199	50,000
No	Month	Saline volume	Reported
7	July	151	41,000
8	August	136	31,000
9	September	130	32,000
No	Month	Saline volume	Reported
10	October	221	60,000
11	November	180	50,000
12	December	125	31,000



Regional Monitoring

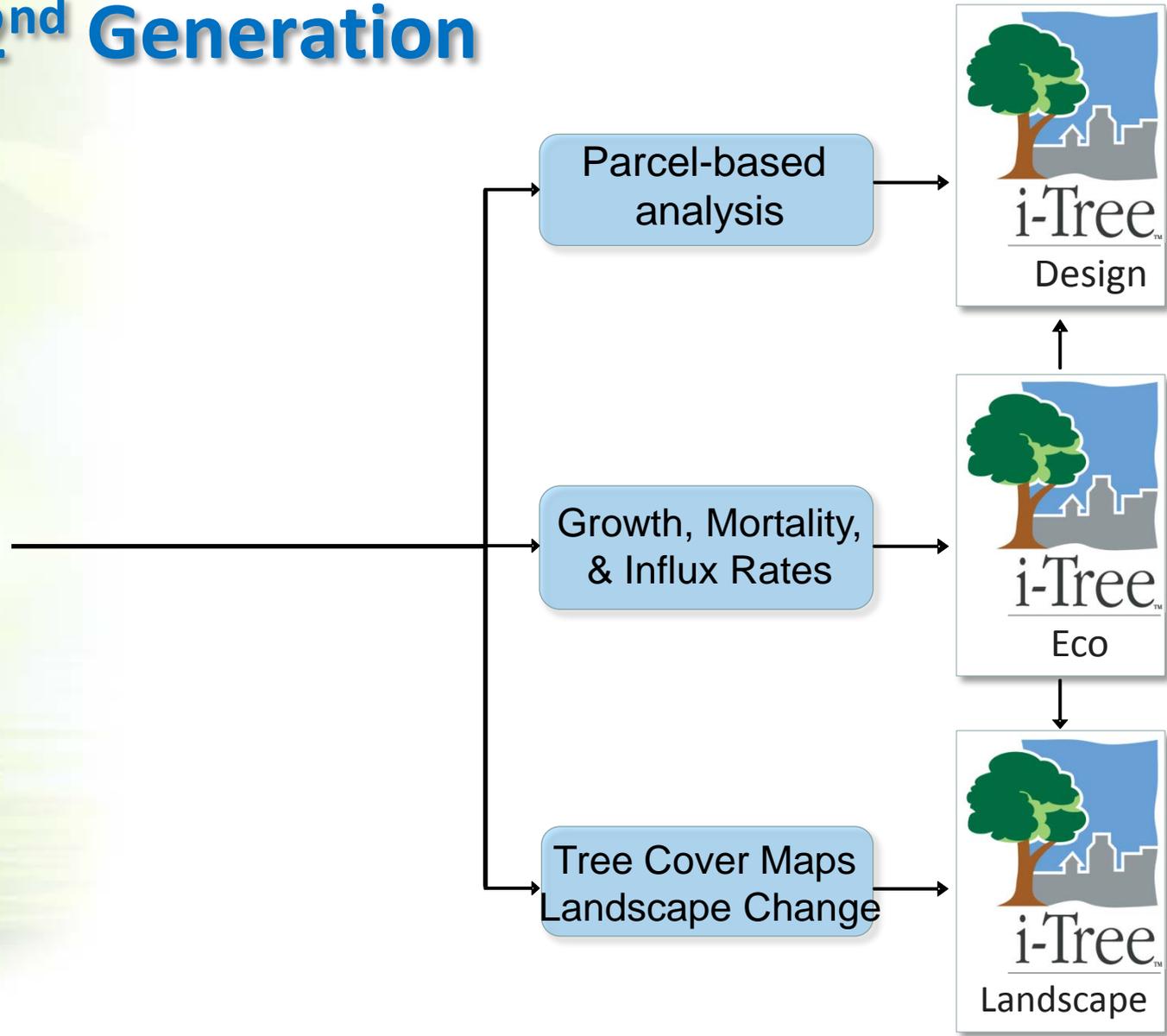


Other Improvements



- 🌳 Snowmelt routine in *Hydro*
- 🌳 Radar-based precipitation data in *Hydro*
- 🌳 Updated pollution values (BENMAP)
- 🌳 Tree interception and transpiration in *Eco/Design*
- 🌳 PM2.5 removal in *Eco/Design*
- 🌳 VOC emissions in *Eco/Design*
- 🌳 Numerous other improvements to all programs

i-Tree 2nd Generation



Local
SCALE
Regional

Version 6.0+: 2013+

- 🌳 Integration of Streets into Eco
- 🌳 Projections of tree pop. and canopy cover
- 🌳 Enhanced species information
- 🌳 Plot re-measurement analyses
- 🌳 Climate change projections
- 🌳 Projected development patterns
- 🌳 Priority planting and protection maps (Landscape)
 - 🌳 Temperature, pollution, eco. services, etc

What would you like i-Tree to do?



i-Tree: Your portal for urban forest assessment

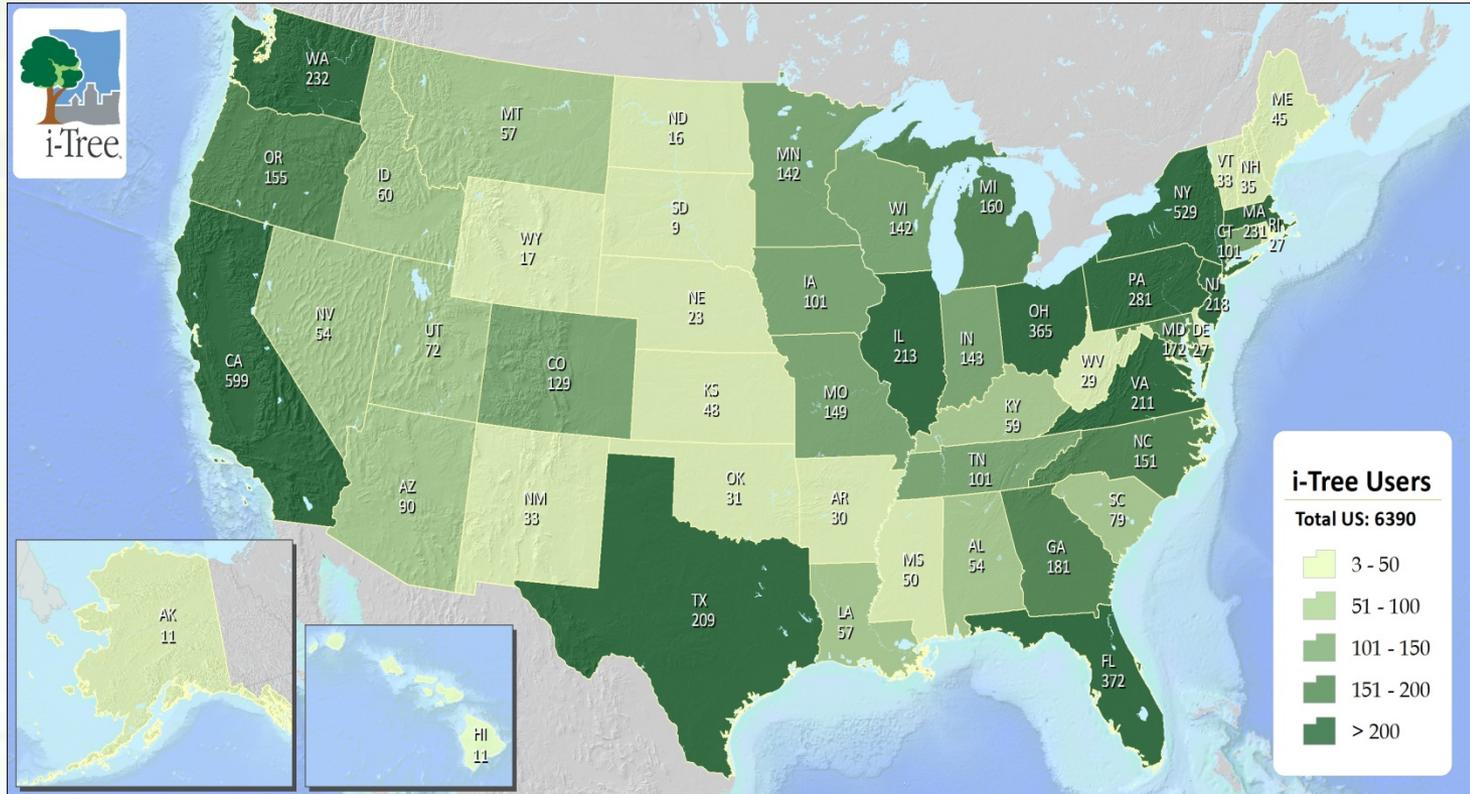
- ✓ Visit www.itreetools.org
- ✓ Email: info@itreetools.org
 - 🌳 Dave Nowak: dnowak@fs.fed.us
 - 🌳 Scott Maco: scott.maco@davey.com
- ✓ User's forum: <http://forums.itreetools.org/>

Thank You!

Discussion



i-Tree user base continues to grow...



 City foresters

 Consultants

 Non-profits

 Universities

 Homeowners

 Planners

“U.S. benefit analysis snared \$220m for trees”

— Horticulture Week (10/1/2009)