

# Cultivating Global Impact Through Innovative Tools:

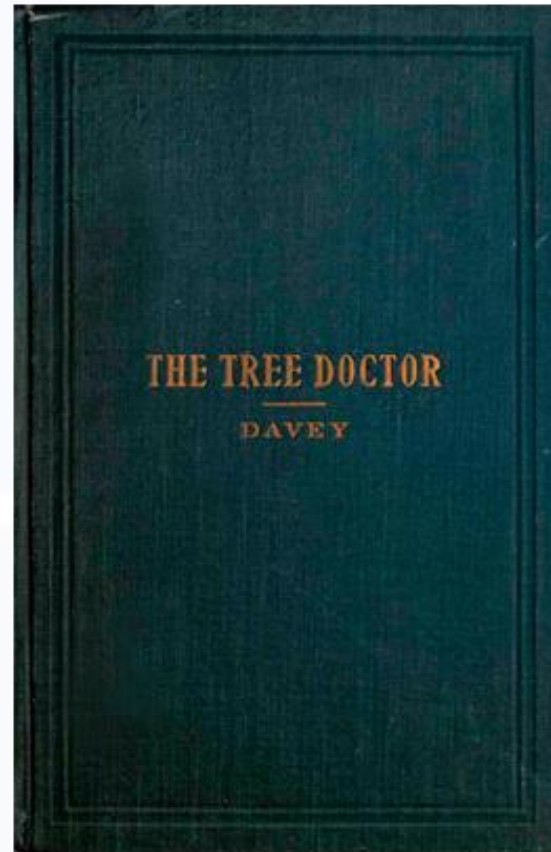
An overview of i-Tree and its applications for communities, practitioners and academics

Scott Maco

The Davey Tree Expert Company

# The Davey Tree Expert Company – History

- Planting and taking care of trees since 1880
- Mr. John Davey
- “The Tree Doctor”
- Science-based practices





# The Davey Tree Expert Company – Today

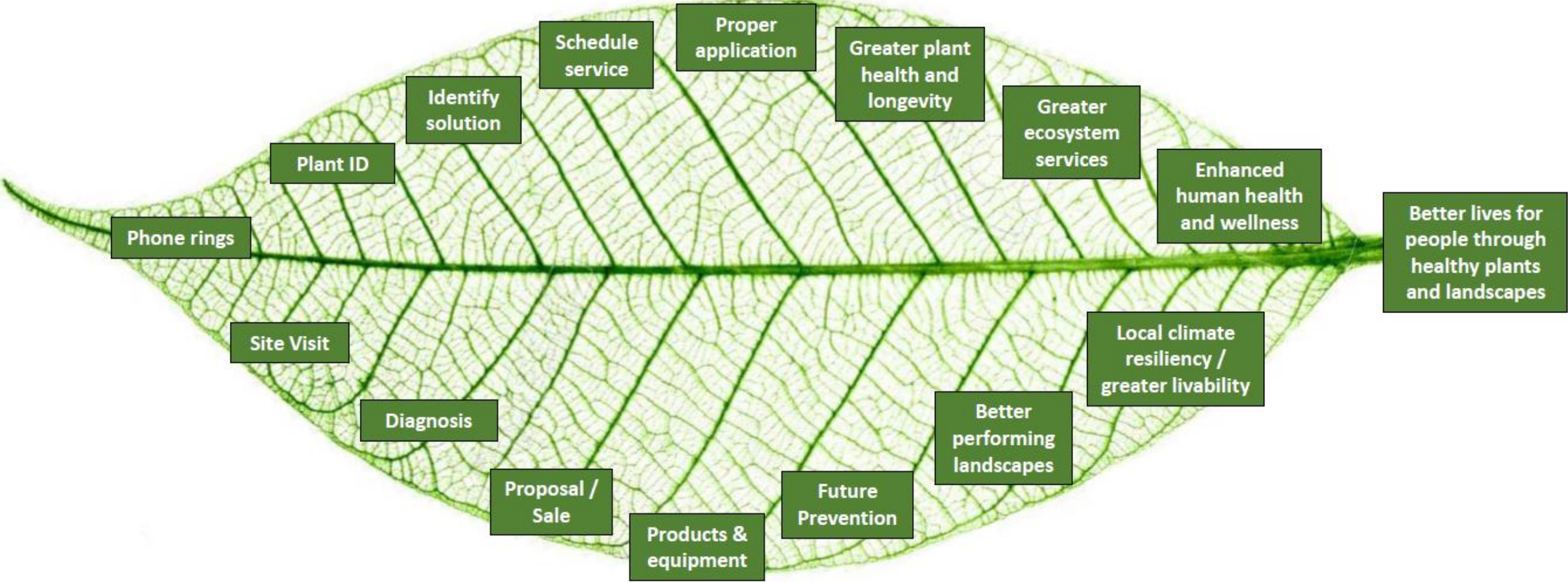


- Residential, Utility, Commercial, and Environmental Consulting





# People. Purpose. Planet





## A Timeline History of Davey Tree

Over the past 139 years, The Davey Tree Expert Company has grown from a small seedling of an idea first planted by John Davey into a giant within the green industry.

Since 1880, Davey has set industry standards for tree care and become one of the largest employee-owned companies in the U.S. As Davey has grown, so too has its commitment to its clients, employees and the environment.

Explore this timeline of Davey history and see how the Davey Company remains true to its roots.



*Martin L. Davey, Sr., plants a tree in 1924 as a memorial to his father, John Davey, founder of Davey Tree, who died in 1923.*

**1880**

John Davey founds The Davey Tree Expert Company.



**1884**

The grounds of Kent's Standing Rock Cemetery, located today across from Davey's corporate headquarters, serve as an outdoor laboratory for perfecting early tree care methods.



**1901**

Davey publishes his book "The Tree Doctor" outlining his scientific methods for healing and caring for America's trees.

**1908**

The Davey Institute of Tree Sciences (D.I.T.S.) is founded to train employees in the science of tree care; the inaugural class graduates in 1909.



**1909**

John Davey, as the first president, files the articles of incorporation for The Davey Tree Expert Company along with his son, Martin L. Davey, Sr., who is named general manager and treasurer.



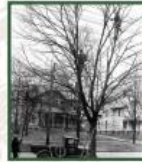
**1920**

Paul Davey, Martin's younger brother, introduces mechanization into the business, improving efficiency through his adaptation of pneumatic compressor technology. The compressors improved fertilization and cavity repair methods in the field, increasing efficiency and profitability.



**1921**

Davey Tree moves into the utility line clearance market with a contract for Northern Ohio Power and Light Company.



**1930**

Davey's Canadian operations are founded.



**1934**

The company begins to recover from the effects of the Depression by turning a modest profit after three straight years of losses. In the same year, Martin L. Davey, Sr. is elected Ohio's fifty-third governor.



**1946**

Martin L. Davey, Sr., dies. His son, M.L. Davey, Jr., becomes president at age 28 just months after returning from three years of service in WWII.



**1953**

Bucket trucks and brush hogs are introduced to Davey crews. These advancements come on the heels of the advent of the power chainsaw, brush chipper, chemical brush control and mist blowing, all of which were introduced to the tree care industry by the close of the last decade.



**1954**

The new Davey Technical Service Center opens in Kent. As home to research and development, the new facility also houses D.I.T.S. and is the predecessor to the Davey Institute.

**1967**

Davey opens the Kent Shop in Kent, Ohio, to service the company's rapidly expanding equipment fleet.



**1969**

Davey Tree acquires the Davey Tree Surgery Company in California.

**1976**

Davey is granted a patent for developing Arbor Green, a revolutionary liquid tree fertilizer.



**1977**

Jack Joy, a 30-plus year Davey employee, is elected president and chief operating officer at the same time the Davey family announces plans to sell the company.



**1979**

Davey becomes employee-owned as the employees of the company, led by Jack Joy, acquire Davey Tree from the family.



**1982**

The Employee Stock Purchase Plan is introduced, making it easier for employees to acquire shares through payroll deduction—at a 15 percent discount.

**1984**

Davey's Residential/Commercial service line is established.

**1985**

Davey opens its new corporate headquarters in Kent, Ohio. That same year, Doug Cowan, who played a crucial role in the employee acquisition, is elected president and chief operating officer.



**1995**

Davey Resource Group is established to provide an array of services to clients, including natural resource consulting, tree inventories, utility vegetation management and more.

**1999**

Karl Warnke is elected president and chief operating officer with two decades of Davey service.



**2006**

Davey partners with the USDA and others to begin development of the i-Tree software suite to quantify the benefits of trees.



**2012**

Davey management develops a Strategic Plan to concentrate the company's focus and direction.

**2016**

Pat Covey is elected president and chief operating officer with 25 years of Davey service.



**2018**

Davey exceeds \$1 billion in total annual revenue and employs 10,000 across North America.

**2019**

Davey employees celebrate 40 years of employee-ownership.

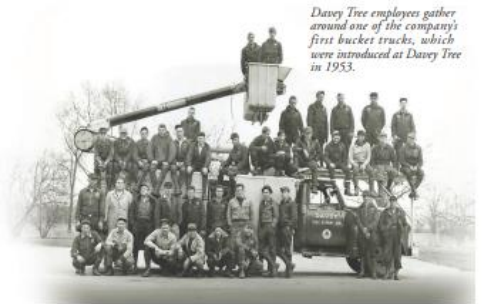


## True to Our Roots

From The Tree Doctor in 1901 to the employee acquisition of Davey Tree in 1979, the Davey Company remains committed to its clients, employees and the environment.

Davey continues to provide clients with services based on the latest, proven scientific tree care methods. Davey's commitment to its employees is shown through advanced training programs and by encouraging employees to own a part of the Davey Company. Davey demonstrates its commitment to the environment with the ongoing development of responsible business practices and by helping show the world the value of trees.

Adhering to these principles, with roots dating back nearly 140 years, has made Davey a success. And Davey's commitment to these ideals ensures the Davey Company will remain a leader in the green industry for years to come.

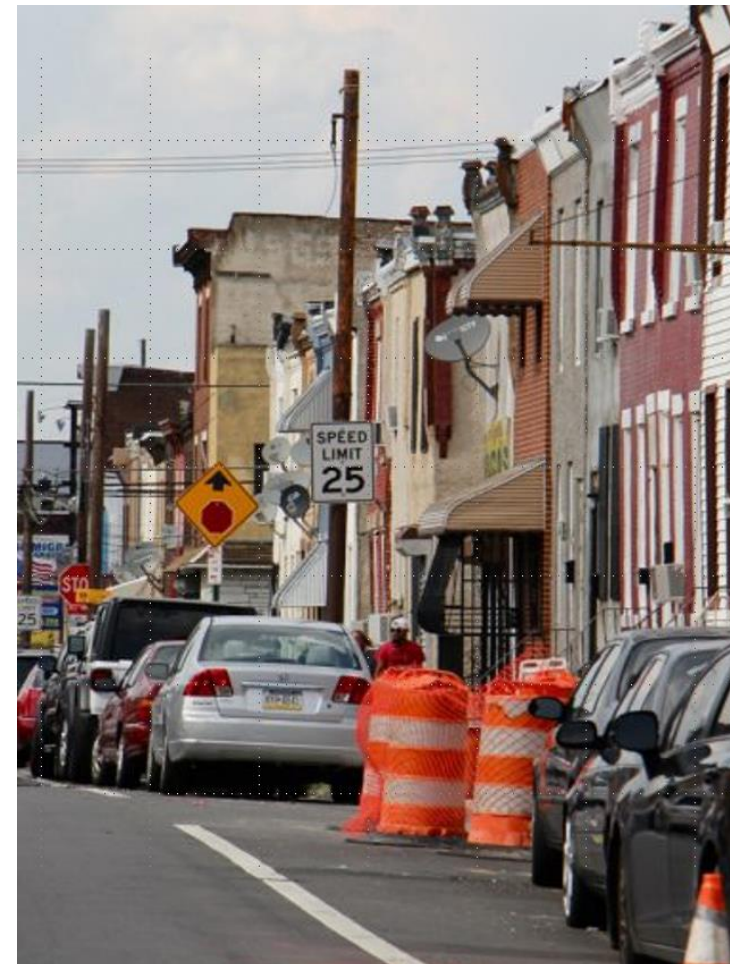


*Davey Tree employees gather around one of the company's first bucket trucks, which were introduced at Davey Tree in 1953.*



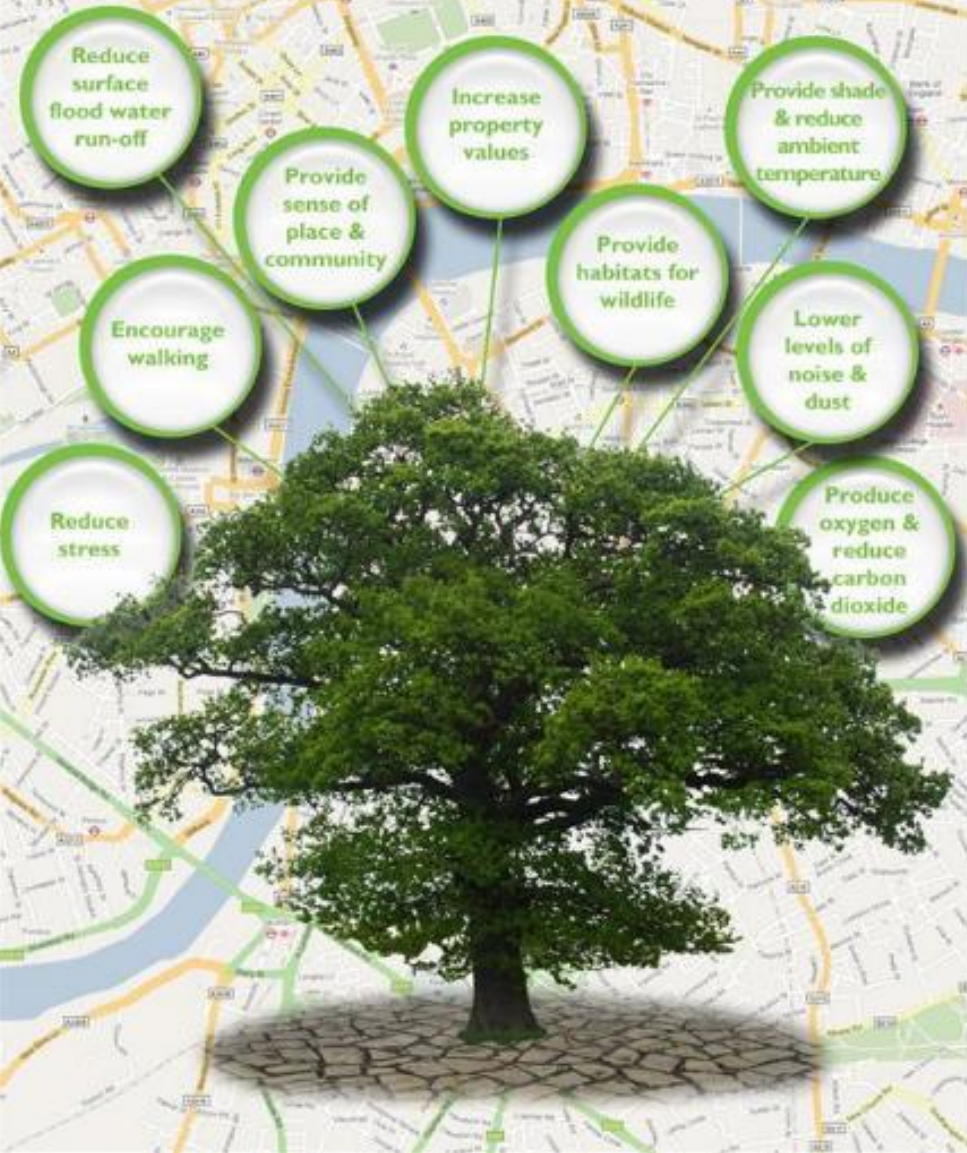


# If you could only plant one tree?





# Urban Tree Benefits





# Urban Tree Costs & Risks

- Stress
  - Drought
  - Cold
  - Heat
  - Wind
- Pest and Disease
- Invasive species
- Urban heat islands
- Air pollution
- Development



Print Email Facebook Twitter More

**A fallen tree caused by Typhoon Lingling lies across a walkway in Seoul, South Korea**

#### TOP STORIES

- SPORT Marsh turns destroyer as Australia turns around sloppy start
- More controversy builds around besieged MP Gladys Liu



# Are trees worth the risk & costs?



<b>Total benefits</b>	<b>Ft. Collins</b>	<b>Cheyenne</b>	<b>Bismarck</b>	<b>Berkeley</b>	<b>Glendale</b>
Energy	\$ 112,025	\$ 186,967	\$ 84,348	\$ 553,061	\$ 116,735
CO2	\$ 40,454	\$ 29,134	\$ 27,268	\$ 49,588	\$ 12,039
Air Quality	\$ 18,477	\$ 11,907	\$ 3,715	\$ (20,635)	\$ 32,571
Stormwater	\$ 403,597	\$ 55,297	\$ 496,227	\$ 215,648	\$ 37,298
Property increase	\$ 1,596,247	\$ 402,723	\$ 367,536	\$ 2,449,884	\$ 467,213
<b>Total benefits</b>	<b>\$ 2,170,799</b>	<b>\$ 688,029</b>	<b>\$ 979,094</b>	<b>\$ 3,247,545</b>	<b>\$ 665,856</b>
<b>Total costs</b>					
Planting	\$ 111,052	\$ 45,913	\$ 5,880	\$ 95,000	\$ 21,100
Pruning	\$ 405,344	\$ 84,677	\$ 94,850	\$ 770,000	\$ 88,412
Remove/dispose	\$ 130,487	\$ 23,337	\$ 50,061	\$ 70,000	\$ 12,710
lm/liter/gm waste	\$ 94,394	\$ 97,840	\$ 38,241	\$ 195,000	\$ 65,813
Infrastructure and liability	\$ 72,200	\$ -	\$ 21,490	\$ 1,062,000	\$ 3,000
Amin/inspect/other	\$ 184,161	\$ 76,130	\$ 106,118	\$ 180,000	\$ 85,401
<b>Total costs</b>	<b>\$ 997,638</b>	<b>\$ 327,897</b>	<b>\$ 316,640</b>	<b>\$ 2,372,000</b>	<b>\$ 276,436</b>
<b>Net benefits</b>	<b>\$ 1,173,161</b>	<b>\$ 358,133</b>	<b>\$ 662,454</b>	<b>\$ 875,545</b>	<b>\$ 389,421</b>

<b>B/C Ratio</b>	<b>2.18</b>	<b>2.09</b>	<b>3.09</b>	<b>1.37</b>	<b>2.41</b>
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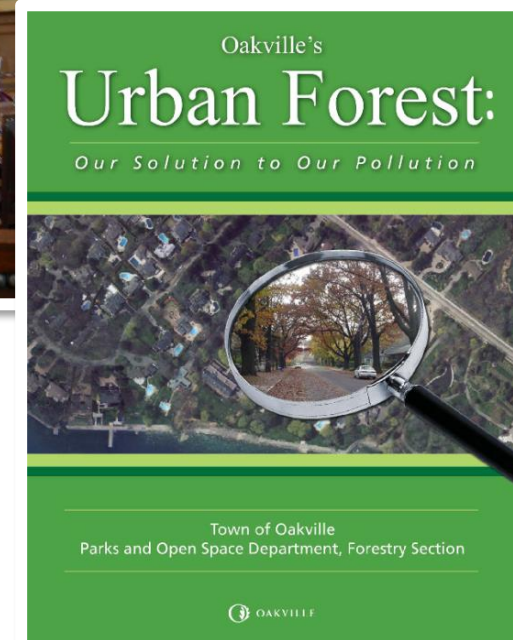
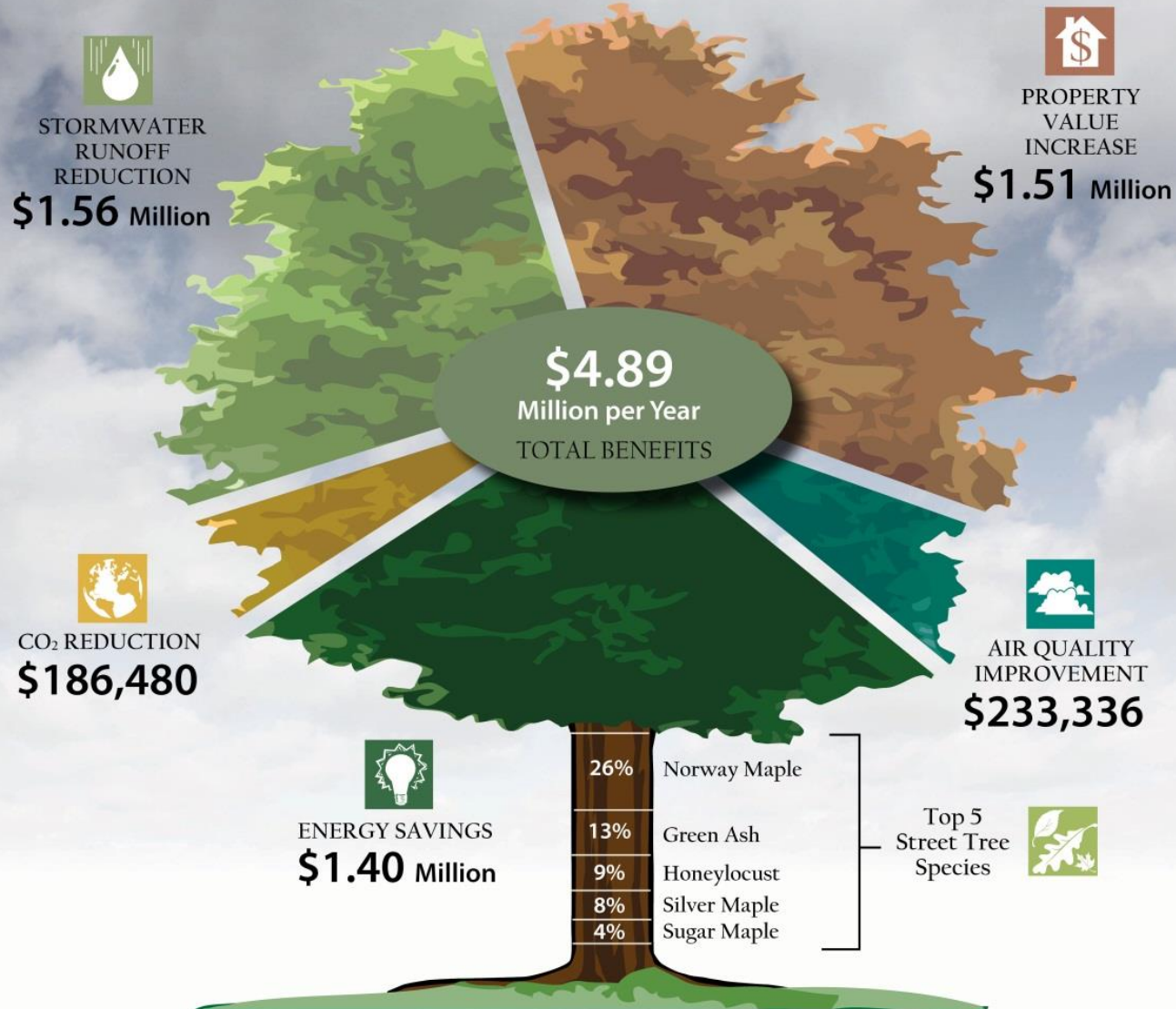
E.G. McPherson; J.R. Simpson; P.J. Peper; S.E. Maco; Q. Xiao. 2005. Journal of Forestry. 103(8): 411-416



# i-Tree: Demonstrating that trees pay us back!



Annually Fox Valley Metro Area public street trees provide<sup>2</sup>...





# What is i-Tree?

## Tools for Assessing and Managing Community Trees & Forests



- Public domain (free) software tools
- Based on peer-reviewed research
- Technical support
- Continuously improved

i-Tree delivers current, peer-reviewed tree benefits estimation science from the USDA Forest Service to all types of users with free tools and support.



**The trees around you:**  
remove hazardous pollutants from the air you breathe,  
absorb carbon dioxide from the air to store as wood,  
and control storm water by intercepting and absorbing rainfall.

**Trees provide more than just beauty and shade.**

**They work hard for all of us, every day!**

[Click here to learn more.](#)

### Tools for assessing individual trees



easy

#### MyTree

Are you new to i-Tree? Start with our EASIEST tool! MyTree helps you quickly assess **individual trees** with a minimum of fuss.  
*web browser or Android | Apple devices; Learn [How to use it!](#)*



#### i-Tree Design

A full-featured web tool with expanded building interactions and forecasting for estimating the benefits of **individual trees**.  
*via your web browser; Learn [How to use it!](#)*



advanced

#### i-Tree Eco

Eco is our flagship tool that accommodates tree inventory IMPORT or field data evaluation to derive **individual tree** benefit estimates.  
*requires installation on a Windows PC; Learn [How to use it!](#)*

### Tree canopy area assessment tools



easy

#### OurTrees

Beta release: Quick **tree canopy** and related information for your community within the continental US!  
*web browser or Android | Apple devices*

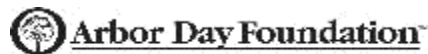


#### i-Tree Landscape

US **tree canopy** and Census maps/data at your fingertips! Identify priority planting & protection areas for climate & social issues.  
*via your web browser; Learn [How to use it!](#)*



i-Tree is a  
Cooperative  
Initiative

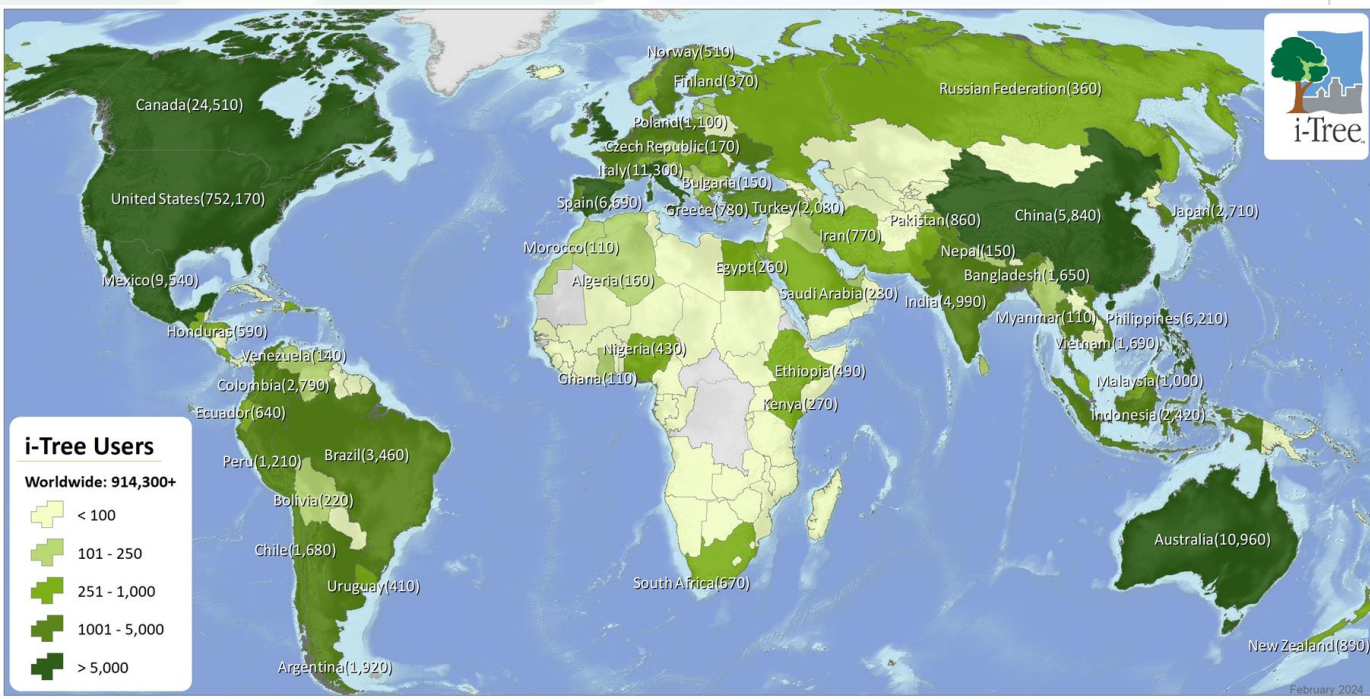
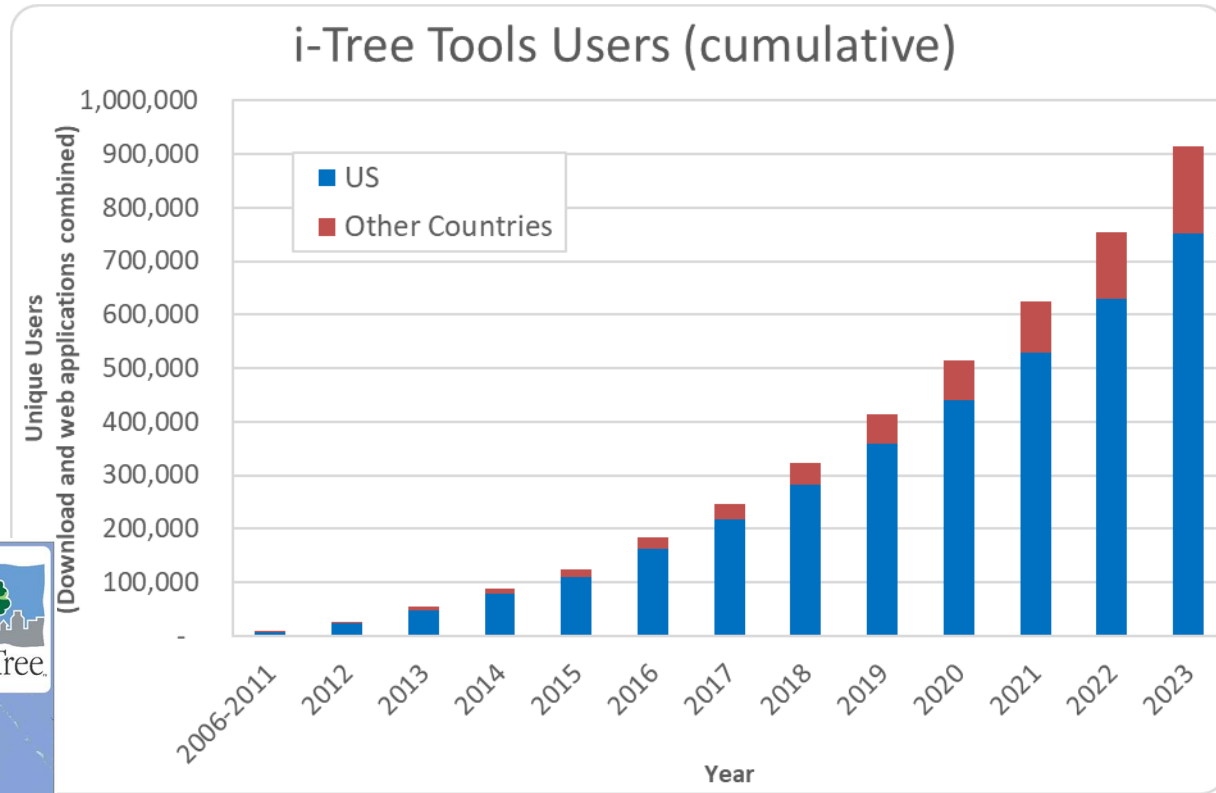




# The program continues to grow....



➤ Increasing number of users, partners and capabilities



# i-Tree's Key Premise



i-Tree Tools



We can influence through our actions: **planning, preservation, planting, maintenance and advocacy.**



# The 2024 i-Tree Suite of Tools



## Core individual tree tools



## Core canopy tools



## Utilities



...

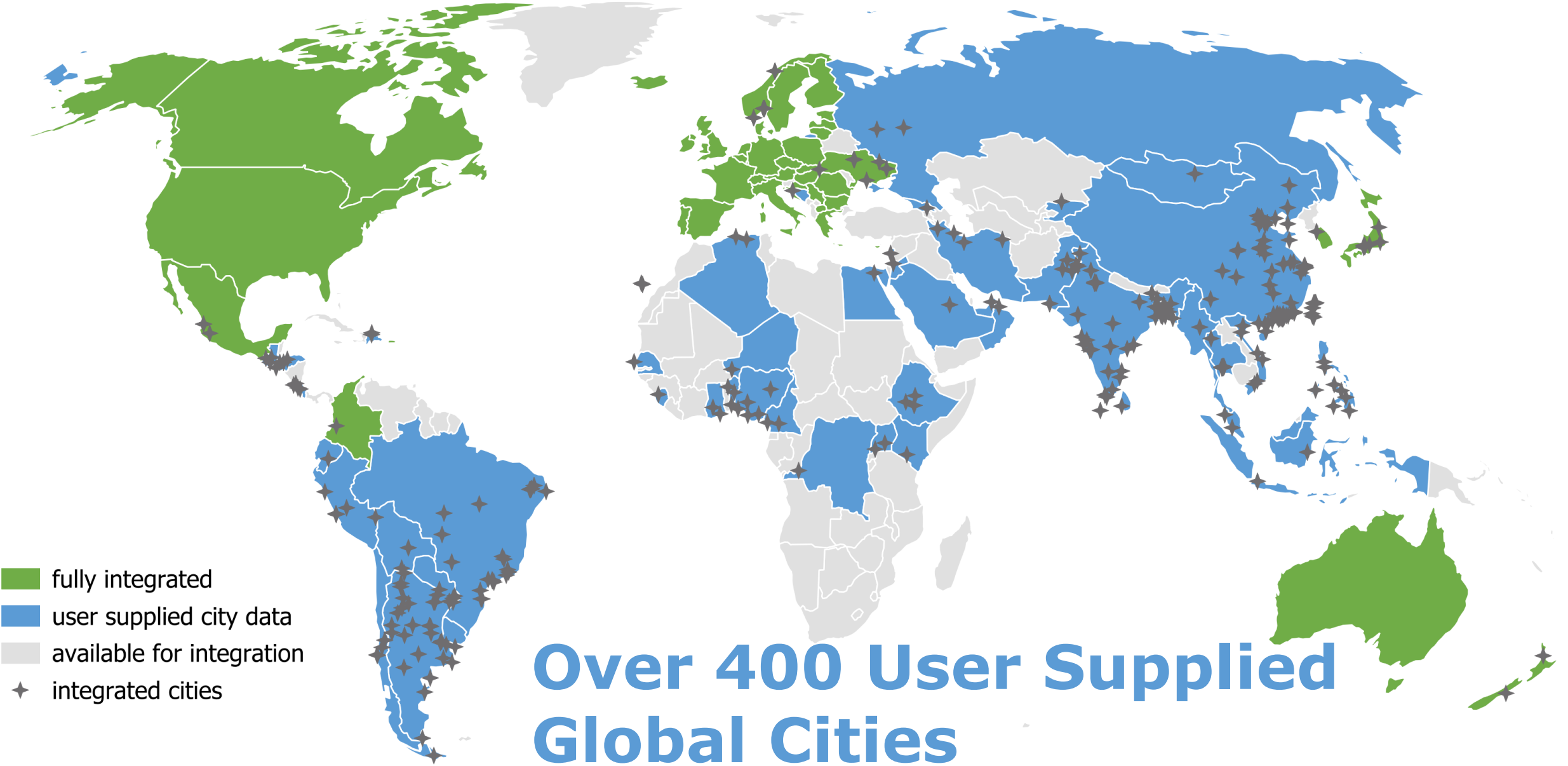
\* i-Tree Tools that can be used internationally



i-Tree is a Cooperative Initiative among these partners

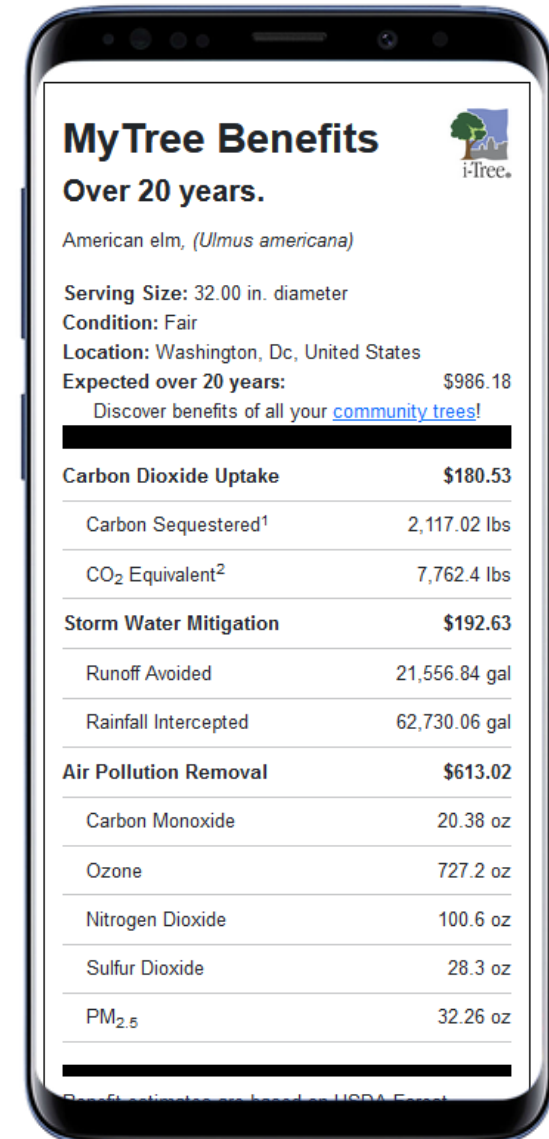
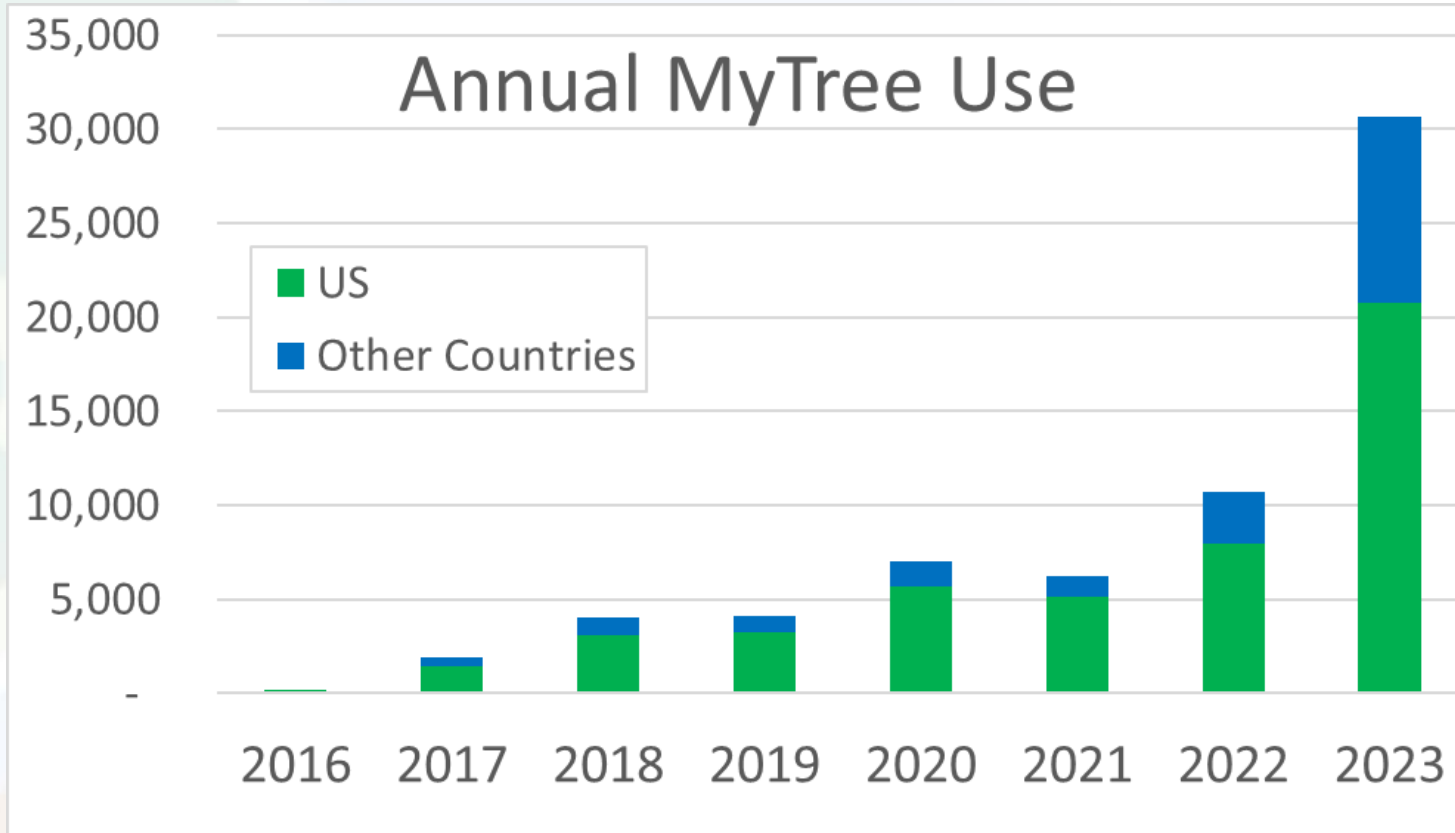


# i-Tree Eco our flagship tool: Available in more places





# MyTree: Driving new users



MyTree.itreetools.org

# My Tree in Ho Chi Minh City, Vietnam




## Tree Lover's Day



From: Huyen Do





## Phần 2. Hướng dẫn tính toán tác động của Cây bằng I-Tree

**Bước 1: Vào đường link:**  
<https://mytree.itreetools.org/#/tree>  
hoặc quét QR này để vào link trên



**Bước 2: Đổi hệ đo sang mét.**  
Bấm vào 3 dấu gạch ngang góc trên bên phải màn hình, sau đó nhìn các menu đổ xuống bên trái, chọn Project. Sau đó chọn: Metric Unit



**Bước 3: Nhập thông tin về cây**



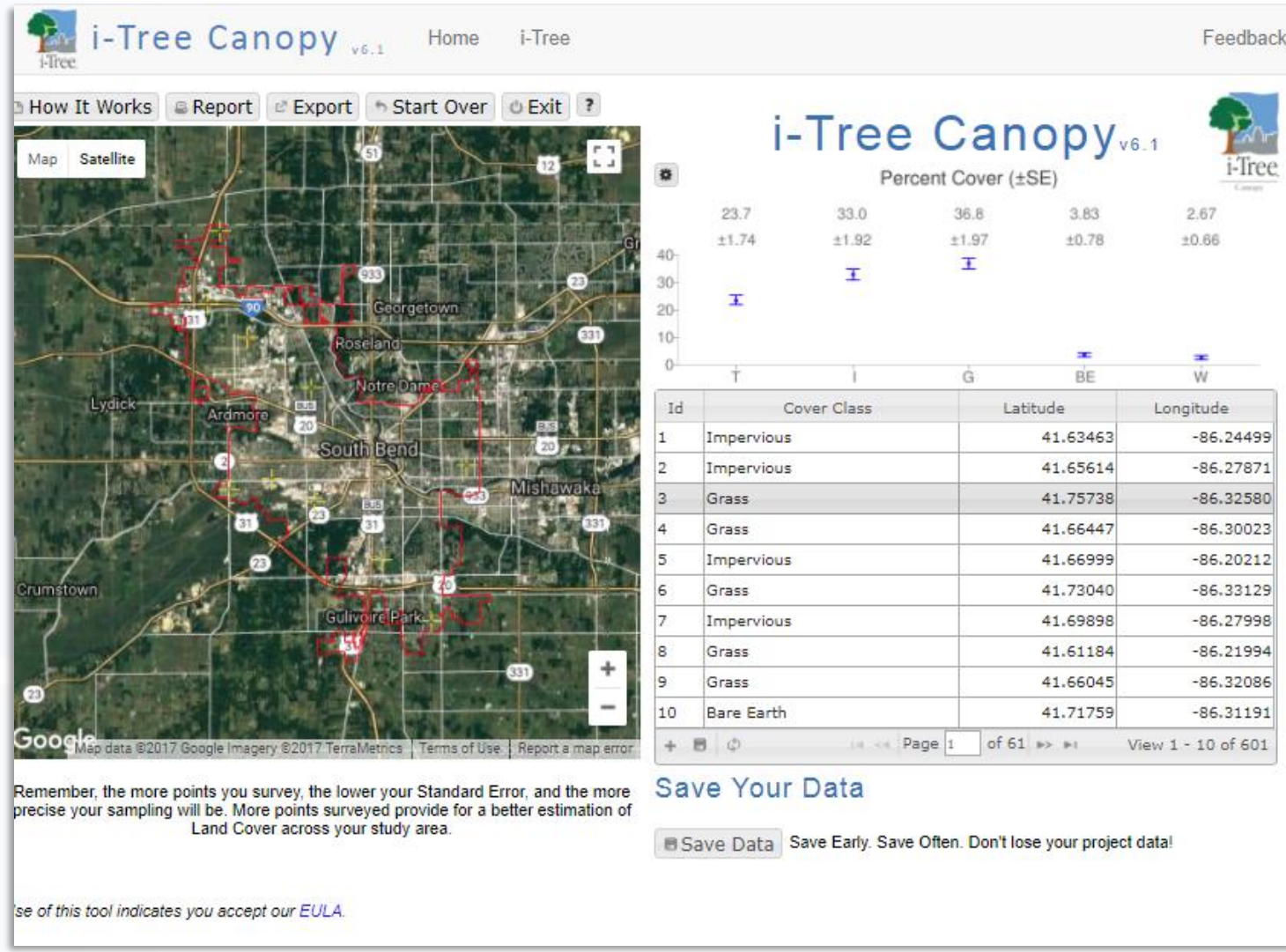
# What is i-Tree Canopy?

Combining the magic of Google with US Forest Service science to estimate canopy cover

## Rapidly estimate:

- % Tree cover
- Change over time
- Benefits in selected locations

<https://canopy.itreetools.org/>



**i-Tree Canopy v6.1**

Home i-Tree Feedback

How It Works Report Export Start Over Exit ?

Map Satellite

Percent Cover ( $\pm$ SE)

	T	I	G	BE	W
	23.7	33.0	36.8	3.83	2.67
	$\pm 1.74$	$\pm 1.92$	$\pm 1.97$	$\pm 0.78$	$\pm 0.66$

Id	Cover Class	Latitude	Longitude
1	Impervious	41.63463	-86.24499
2	Impervious	41.65614	-86.27871
3	Grass	41.75738	-86.32580
4	Grass	41.66447	-86.30023
5	Impervious	41.66999	-86.20212
6	Grass	41.73040	-86.33129
7	Impervious	41.69898	-86.27998
8	Grass	41.61184	-86.21994
9	Grass	41.66045	-86.32086
10	Bare Earth	41.71759	-86.31191

Remember, the more points you survey, the lower your Standard Error, and the more precise your sampling will be. More points surveyed provide for a better estimation of Land Cover across your study area.

Use of this tool indicates you accept our [EULA](#).

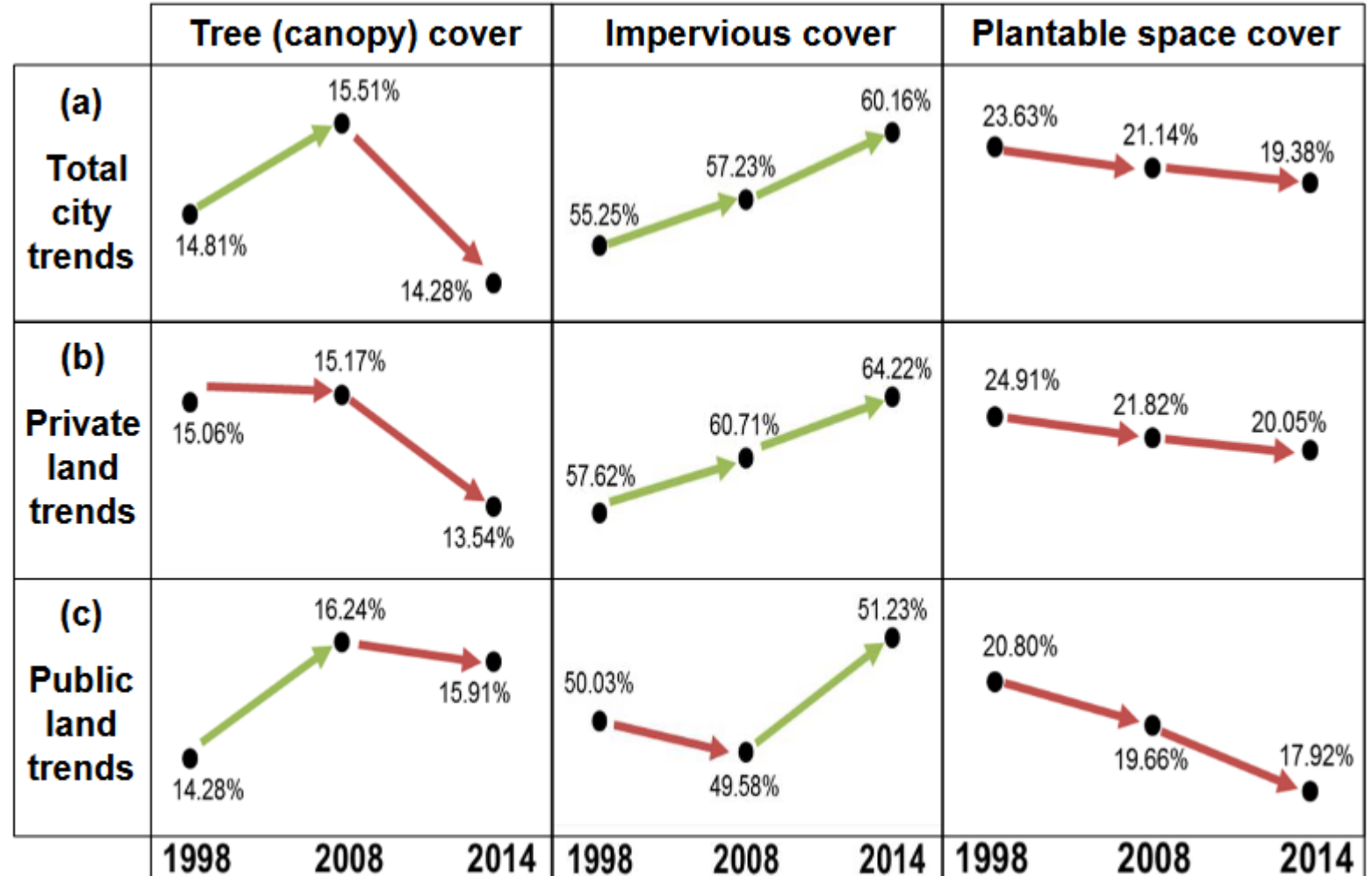
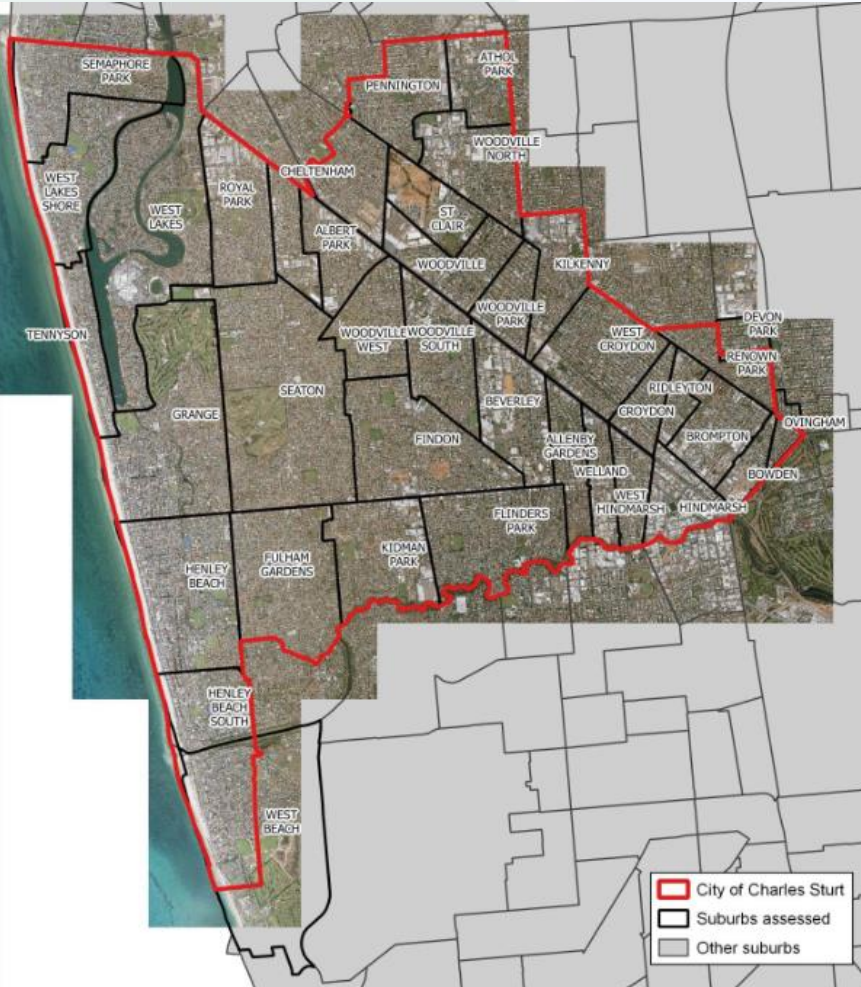
**Save Your Data**

Save Data Save Early. Save Often. Don't lose your project data!

# Tree Canopy Cover in the City of Charles Sturt

## Benchmark Assessment

From: Jenni Garden  
 seed  
 consulting services

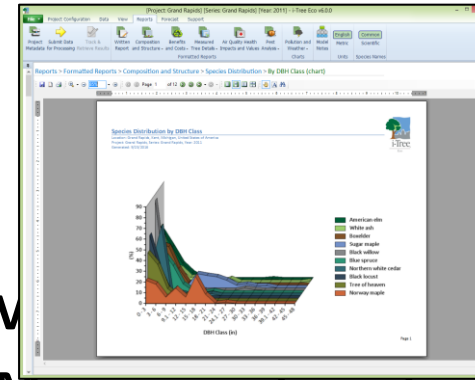
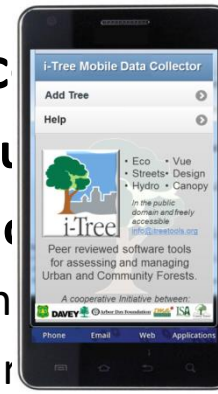






➤ **i-Tree Eco Applications:**

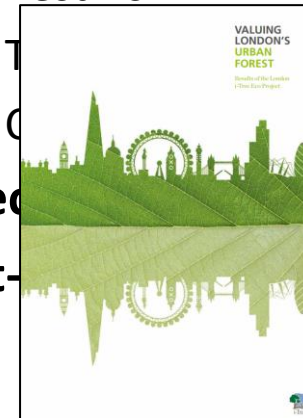
- **Structure**
- **Function**
- **Energy**
- **Air Quality**
- **Carbon**



- **Value**
- **Management needs**
- **Pest risk**
- **T...**
- **C...**



- **Forecast**
- **Cost-**



# i-Tree Eco in Great Britain

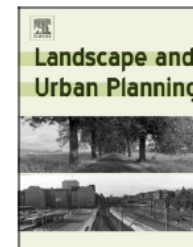


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Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

## Landscape and Urban Planning

journal homepage: [www.elsevier.com/locate/landurbplan](http://www.elsevier.com/locate/landurbplan)



Research Paper

### Achieving impact from ecosystem assessment and valuation of urban greenspace: The case of i-Tree Eco in Great Britain

S. Raum<sup>a,\*</sup>, K.L. Hand<sup>b,c</sup>, C. Hall<sup>d</sup>, D.M. Edwards<sup>d</sup>, L. O'Brien<sup>b</sup>, K.J. Doick<sup>b</sup>

<sup>a</sup> Centre for Environmental Policy, Imperial College London, UK

<sup>b</sup> Forest Research, Farnham, UK

<sup>c</sup> School of Environment, Earth and Ecosystem Sciences, The Open University, UK

<sup>d</sup> Forest Research, Roslin, UK

...inform tree species selection and priority areas for new planting...(Swansea)

... set climate change adaptation targets...(City council)

... support tree maintenance ...(Council Task and Finishing Forum )

... support monitoring and management of diseased trees ...(Devon Ash Resilience Forum)



Fig. 1. Location of the 22 i-Tree Eco projects known to be completed or in progress in GB as of January 2018.

[Download article here](#)



# i-Tree Research Suite



Hydrology



\* **Hydro:** Statistical hydrology model with an emphasis on modelling vegetative processes



**Buffer:** Non-point source (NPS) nutrient hotspot mapping tool



**Cool River:** Statistical river temperature model

Temperature



\* **Cool Air:** Air temperature model with an emphasis on the effects of vegetation

\* *i-Tree Tools that can be used internationally*

# i-Tree API opening new opportunities



**BARNET**  
LONDON BOROUGH

Community Tree Portal

Go to My Location

Search for an address

Tree Layers:

- Existing Trees
- To Be Planted Winter 2023/2024
- Potential New Planting Location
- Potential Replacement Planting
- Felled Tree

Map

Details | **Eco Benefits** | Tree Works

	<b>Total Annual Benefits</b> £37.38	
	<b>Total Carbon Stored</b> 287.9 kg	
	<b>Total CO<sub>2</sub> Sequestered</b> 1.056 tonnes (£266.04)	
	<b>Annual CO<sub>2</sub> Sequestered</b> 10.7 kg (£9.89)	
	<b>Annual Runoff Avoided</b> 0.600 m <sup>3</sup> (£0.57)	
	<b>Annual Pollutants Removed</b> 218 g (£26.92)	

Enquire Close

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<https://dtbe-api.daveyinstitute.com/>



# Growth is built on partnerships



## Formal Partners

- Treeconomics in the UK
- US Forest Service
- International Programs
  - Fabiola Lopez – Mexico
  - Maria Arroyave – Colombia
  - Akshat Tyagi – India
  - i-Tree 4UA

## Informal Partners

- Jenni Garden – Edge Consulting, Australia
- Ana Macias – i-Tree Spain
- Arnold Muelenbelt – BT, Netherlands
- Wendy Batenberg – i-Tree Netherlands
- Naomi Zurcher – ArborAegis, Switzerland
- GreenViet – Vietnam
- Bangladesh Forest Service
- Korean Forest Service
- ...and many more

# There are lots of resources to help



[www.itreetools.org](http://www.itreetools.org)

Videos

Documentation

Online tools

Support

Examples

Downloads

Newsletters

Webinars

[info@itreetools.org](mailto:info@itreetools.org)

[Scott.maco@davey.com](mailto:Scott.maco@davey.com)

