San Diego COUNTY TREES

Home of the San Diego County tree map

"Planning the Urban Forest"

Why we need larger and healthier trees

San Diego Chapter
American Planning Association
October 18, 2013

Robin Y. Rivet: robin.rivet@sandiegotreemap.org
ISA Certified Arborist- WE-7558A

What is Urban Forestry?

- Why does it matter?
- Where to get information?
- What has gone wrong?
- How can we improve?

This is a nice place…

BUT DIFFICULT TO RETROFIT FOR MOST CITIES

It’s NOT just about trees…

SAN DIEGO URBAN FOREST

Watersheds
Schoolyards
Private homes
Streets and alleys
Places of worship
Government lands
Beaches and dunes
Commercial business

The legal “definition” from California code

PUBLIC RESOURCES CODE
SECTION 4799.06-4799.12

4799.09. As used in this chapter the following terms have the following meanings:

(c) **"Urban forestry"** means the cultivation and management of native or introduced trees and related vegetation in urban areas for their **present** and **potential contribution** to the **economic, physiological, sociological, and ecological** well-being of urban society**.**

(d) "Urban forest" means those **native or introduced trees** and **related vegetation** in the urban and near-urban areas, including, but not limited to, **urban watersheds, soils and related habitats, street trees, park trees, residential trees, natural riparian habitats**, and trees on other **private** and **public** properties.

The Urban Forestry Act was passed in 1978, OPR page launched 2012

Urban Forestry Act (PRC 4799.

Is this message reaching stakeholders?

CA.GOV The Governor's Office of Planning & Research

Contact

HOME | STATE CLEARINGHOUSE | CEQA | ...NGE | LOCAL GOVT.

Urban Forestry

Trees and the urban forest provide a variety of important benefits in the urban environment. Environmental benefits include removing carbon from the atmosphere, reducing energy use, improving air quality, moderating stormwater flows, protecting water quality, improving economic sustainability, and providing habi... wildlife. In addition to the health benefits realized through the protection and promotion of the environment, trees and urban forests also support the physical and mental health of residents. The urban forest can play a role in meeting carbon reduction mandates required by the Global Warming Solutions Act of 2006. In short, trees can improve the environment, health, and quality of life in our urban environments where Californians live, work, and play.

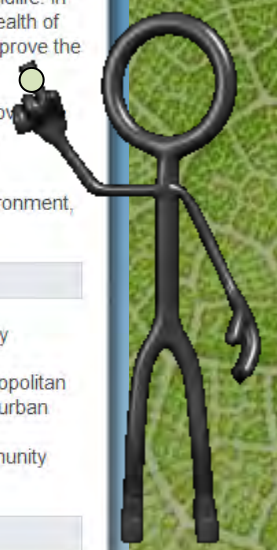
In order to establish and maintain the stream of benefits potentially provided by an urban forest, a community's trees need to be well planned for and managed o... long term. Unlike most other urban infrastructure, the value of the urban forest generally increases over time. Not only are trees and urban forests critical to the community's economic well-being and overall quality of life, but they are an important strategy for addressing chronic disease and obesity.

OPR provides the following information for local governments to plan for a healthy urban forest that optimizes the benefits urban forests can provide to the environment, public health, economy, and more.

STATE AND FEDERAL GOVERNMENT PROGRAMS AND GRANTS

- CAL FIRE Urban Forestry Program, Regional Staff, and Grants: Under the authority of the California Urban Forestry Act of 1978, the Urban & Community Forestry Program works to expand and improve the management of trees and related vegetation in communities throughout California.
- Strategic Growth Council Urban Greening Grants: These grants fund public jurisdictions (including council of governments, countywide authority, a metropolitan planning organization, local government, nonprofit organization, special district, or joint powers authorities) and nonprofit entities in developing a master urban greening plan that will ultimately result in projects to help the State meet its environmental goals and the creation of healthy communities.
- USDA Forest Service Urban and Community Forestry: The Forest Service supports projects and research related to a diverse array of urban and community forestry issues.

RESOURCES FOR LOCAL GOVERNMENTS



American Forests Urban Ecosystem Analysis conducted over six years in ten select cities

An estimated 634,407,719 trees are currently missing from metropolitan areas across the United States –

National Urban Tree Deficit

In 1986, the National Urban and Community Forest Advisory Council conducted a 20-city survey to understand the condition of the nation's street trees.

The first, "State of Our City Forests" (American Forests Magazine June, 1986) reported that urban forests in all the cities were in decline, with the average city losing 4 trees for every one planted.

$$1 + (-4) = -3$$

USDA Forest Service

Urban Forest Health: Identifying Issues and Needs within the Northeastern Area

USDA Forest Service Report

- Urban trees reach maximum potential for environmental benefits after age 30, but the average life-span of a downtown urban tree is less than 10 years.
- Most cities are removing more trees than they are planting.
- 37% percent of cities practice "crisis management" – responding to accidents, impending hazards, and complaints rather than implementing a systematic tree maintenance program.

http://www.fs.fed.us/psw/programs/uesd/uep/

Pacific Southwest Research Station

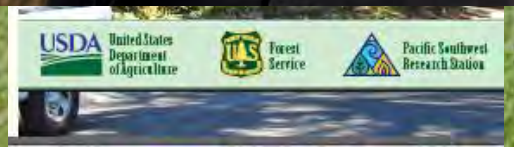
Center for Urban Forest Research

**now called the*

Urban Ecosystems and Processes Team

Lead researcher - Dr. Greg McPherson

algorithms applied to Southern California's i-Tree software were developed by this team



US FOREST SERVICE
100 Years of Caring for the land and serving people

Center for Urban Forest Research

Tree Guidelines for Coastal Southern California Communities – January 2000

What did this study do?

It evaluated 100 sampled trees and compared costs to benefits

It concluded the average temperature in urban areas rose 1 degree every decade over the past 50 years.

It is estimated that future effects of global warming may double this rate.

It evaluated the rate of CO_2 emissions from power plants in Southern California and found SDG&E, LADWP & SCE were ~11% higher than the state average.

The bottom line: Many more trees are needed to help sequester all that carbon

Table A4. Estimated 40-year total benefits and costs for the City of Buena Vista street tree planting (100 trees).

	50 Large Trees		30 Medium Trees		20 Small Trees		100 Trees	Total
Benefits	Res units	$	Res units	$	Res units	$	Res units	$
Electricity (kWh)	82,000	11,480	24,000	3,360	6,400	896	112,400	15,736
Natural Gas (kBtu)	438,000	2,620	132,000	792	34,400	208	604,400	3,620
Net Energy (kBtu)	1,256,000	12,400	378,000	3,732	98,400	976	1,732,400	17,108
Net CO_2 (lb)	280,000	4,200	40,800	612	11,200	168	332,000	4,980
Air Pollution (lb)	6,000	56,760	2,400	16,032	800	4,584	9,200	77,376
Hydrology (gal)	4,240,000	8,620	1,675,200	3,420	1,266,400	2,640	7,181,600	14,680
Aesthetics/Other Benefits		104,020		33,756		9,432		147,208
Total Benefits		**$200,100**		**$61,704**		**$18,904**		**$280,708**
Costs		Public		Public		Public		Public
Tree & Planting		10,750		2,856		1,904		15,510
Pruning		18,740		11,100		7,496		37,336
Remove & Dispose		2,520		948		512		3,980
Infrastructure		260		96		48		404
Irrigation		7,640		3,516		1,944		13,100
Clean-Up		3,880		1,920		1,072		6,872
Liability & Legal		10,620		3,948		2,128		16,696
Admin & Other		3,320		1,524		840		5,684
Total Costs		**$57,730**		**$25,908**		**$15,944**		**$99,582**
Total Net Benefits		**$142,370**		**$35,796**		**$2,960**		**$181,126**

SO...Trees Pay Us Back.

100 San Diego Trees Over 40 Years...

Benefits = $261,000

Energy

Air Quality

Runoff

Real Estate

Costs = $101,000

Planting - Pruning

Removal/Disposal

Pest and Disease

Irrigation - Clean up

Sidewalk Repair

Legal - Admin

Pay Off: $160,000

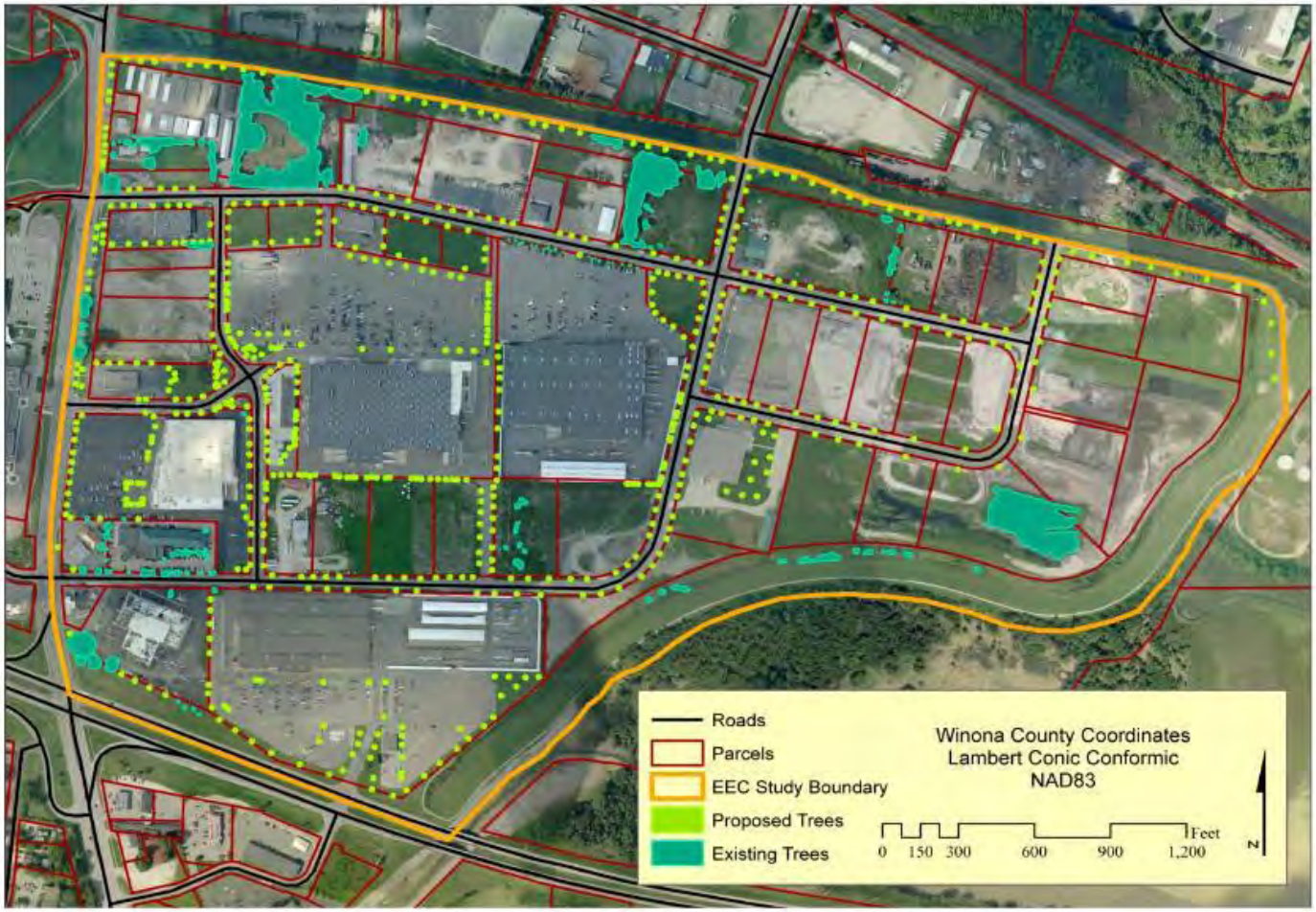
McPherson, E.G., J.R. Simpson, P.J. Peper, K.I. Scott, and Q. Xiao. 2000. Tree guidelines for coastal Southern California communities. Sacramento, CA: Local Government Commission. 98.

The Case for Public Tree Inventories

- Many San Diego County cities have outsourced tree pruning and maintenance to private companies - who then offer to include an inventory of city trees as part of their contract.
- **Too often this results in the fox guarding the hen house.**

Sample view of existing canopy for an assessment and potential tree planting locations.

Appendix 13. Proposed tree planting locations for future east end commercial study area.

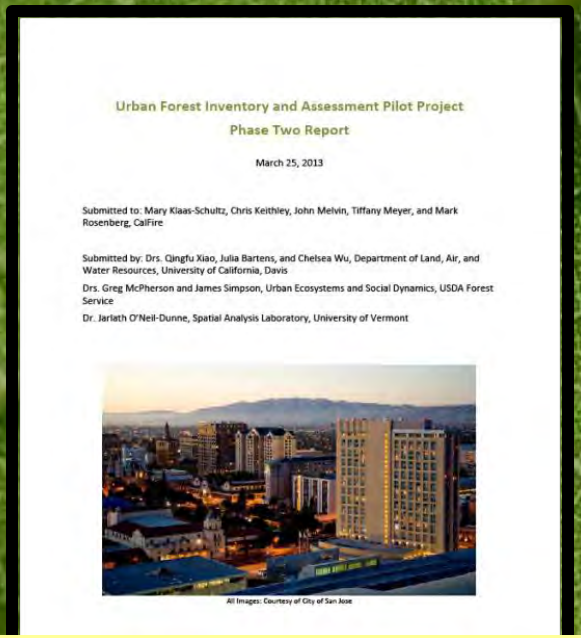


Source Data

The list of datasets used for the land-cover classification is presented in Table 2.

Table 2.Dataset description and source organization.

Data	Source
Building polygons	City of San Jose
Census data (population, block, tract, block group)	Census
Council District boundaries	City of San Jose
Hydrography polygons	USGS
LiDAR 2006 Normalized Digital Surface Model (nDSM)	City of San Jose
LiDAR 2006 point cloud	City of San Jose
NAIP 2010 4-band imagery	USDA
Orthophotographs 2011 3-band imagery	City of San Jose
Property parcel polygons	City of San Jose
Road data (centerline, curb edge, sidewalk)	City of San Jose



Urban Forest Inventory and Assessment Pilot Project

Phase Two Report

March 25, 2013

Submitted to: Mary Klaas-Schultz, Chris Keithley, John Melvin, Tiffany Meyer, and Mark Rosenberg, CalFire

Submitted by: Drs. Qingfu Xiao, Julia Bartens, and Chelsea Wu, Department of Land, Air, and Water Resources, University of California, Davis

Drs. Greg McPherson and James Simpson, Urban Ecosystems and Social Dynamics, USDA Forest Service

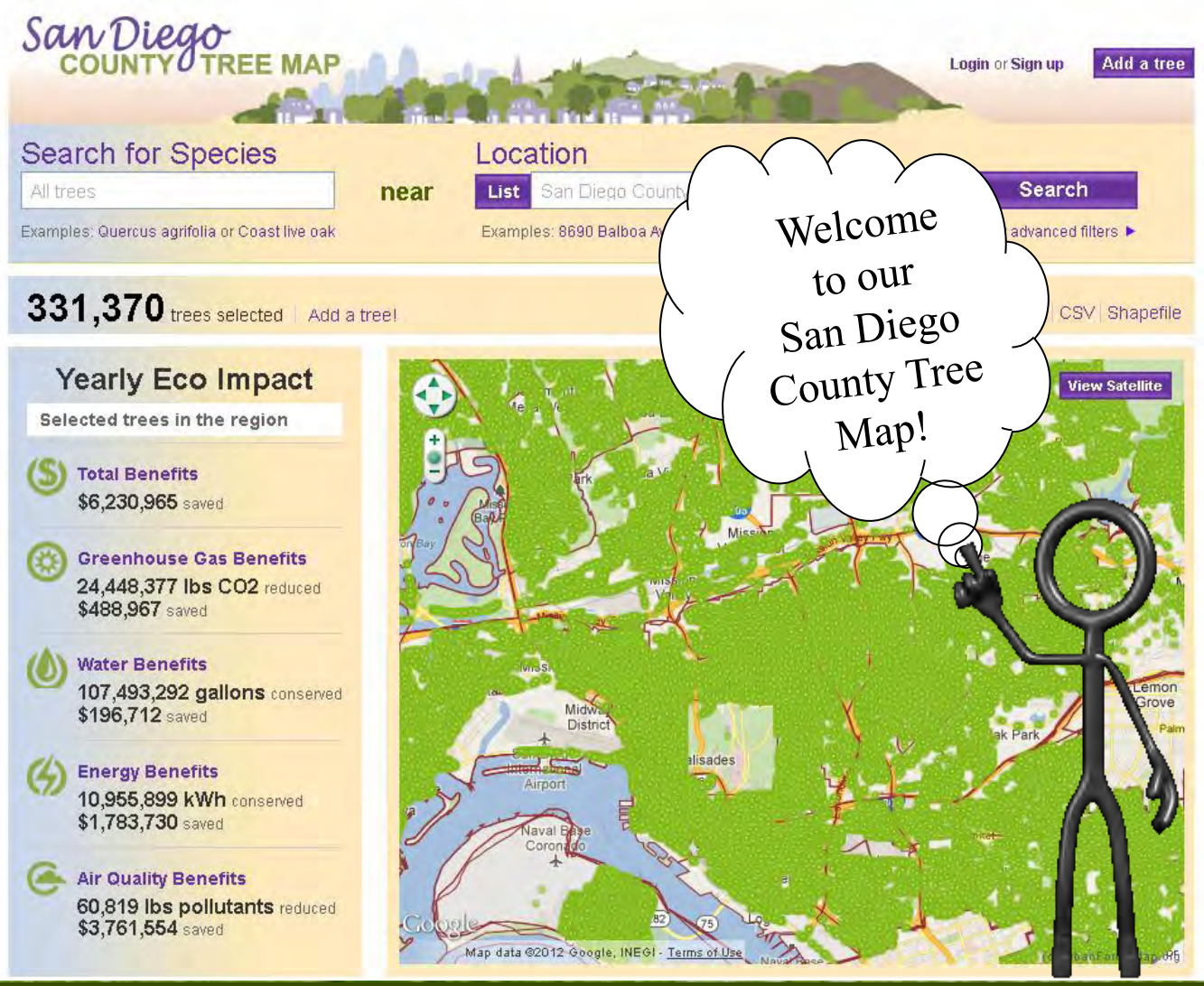
Dr. Jarlath O'Neil-Dunne, Spatial Analysis Laboratory, University of Vermont

All Images: Courtesy of City of San Jose

USFS - San Jose Canopy Assessment 2012

Table 1. Existing and additional urban tree canopy (UTC), estimated tree numbers, and monetized value of ecosystem services produced.

Council District	No. Existing Trees	No. Additional Sites Planted	Total Tree Sites Planted	Existing Stocking Level (%)	Future Stocking Level (%)	Change in Stocking (%)	Existing UTC (%)	Future UTC (%)	Annual Value of Existing Ecosystem Services ($1M)	Annual Value of Additional Ecosystem Services ($1M)	Existing + Additional Ecosystem Services ($1M)
1	124,227	6,812	131,039	67.6	71.3	3.7	18.8	19.8	23.3	1.2	24.6
2	165,669	11,452	177,121	29.8	31.9	2.1	13.6	14.6	26.1	2.0	28.2
3	118,608	9,885	128,493	51.8	56.1	4.3	13.3	14.4	15.1	1.3	16.4
4	196,885	12,786	209,671	38.4	40.9	2.5	12.2	13.0	26.0	1.8	27.8
5	124,303	8,249	132,552	45.6	48.6	3.0	15.8	16.9	20.9	1.6	22.5
6	178,868	8,465	187,333	69.4	72.6	3.3	21.4	22.4	32.5	1.4	34.0
7	92,295	7,304	99,599	39.3	42.4	3.1	12.1	13.0	13.8	1.2	15.0
8	175,366	14,585	189,951	27.7	30.0	2.3	12.9	13.9	20.7	2.3	23.0
9	148,019	8,596	156,615	61.2	64.8	3.6	17.0	18.0	29.0	1.6	30.6
10	244,441	11,866	256,307	47.6	49.9	2.3	20.4	21.4	31.8	2.0	33.8
Total	**1,568,681**	**100,000**	**1,668,681**	**43.1**	**45.9**	**2.8**	**15.4**	**16.3**	**239.3**	**16.4**	**255.8**



The public service tree map is a joint municipal & citizen-science project

The **San Diego County Tree Map** launched on 3/31/2012

We now have over **340,786 trees** in our database

www.sandiegotreemap.org

San Diego COUNTY TREE MAP

Login or Sign up | Add a tree

Search for Species

All trees

Examples: Quercus agrifolia or Coast live oak

near

Location

List | San Diego County

Examples: 8690 Balbo

Search

Show advanced filters ▶

331,370 trees selected | Add a tree!

t options: KML | CSV | Shapefile

TIP:
These are
ANNUAL
benefits.

Yearly Eco Impact

Selected trees in the region

Total Benefits
$6,230,965 saved

Greenhouse Gas Benefits
24,448,377 lbs CO2 reduced
$488,967 saved

Water Benefits
107,493,292 gallons conserved
$196,712 saved

Energy Benefits
10,955,899 kWh conserved
$1,783,730 saved

Air Quality Benefits
60,819 lbs pollutants reduced
$3,761,554 saved

San Diego COUNTY TREES

Home of the San Diego County tree map

Why create a public tree map online?

- Tree canopy is being lost at an alarming rate
- Municipalities are overwhelmed and under-funded
- Minimal awareness about ecosystem values
- Tree identification is made easier for everyone
- Increased citizen engagement
  - Educational opportunities
  - Encourages philanthropy
  - Fruit and nut tree sharing services

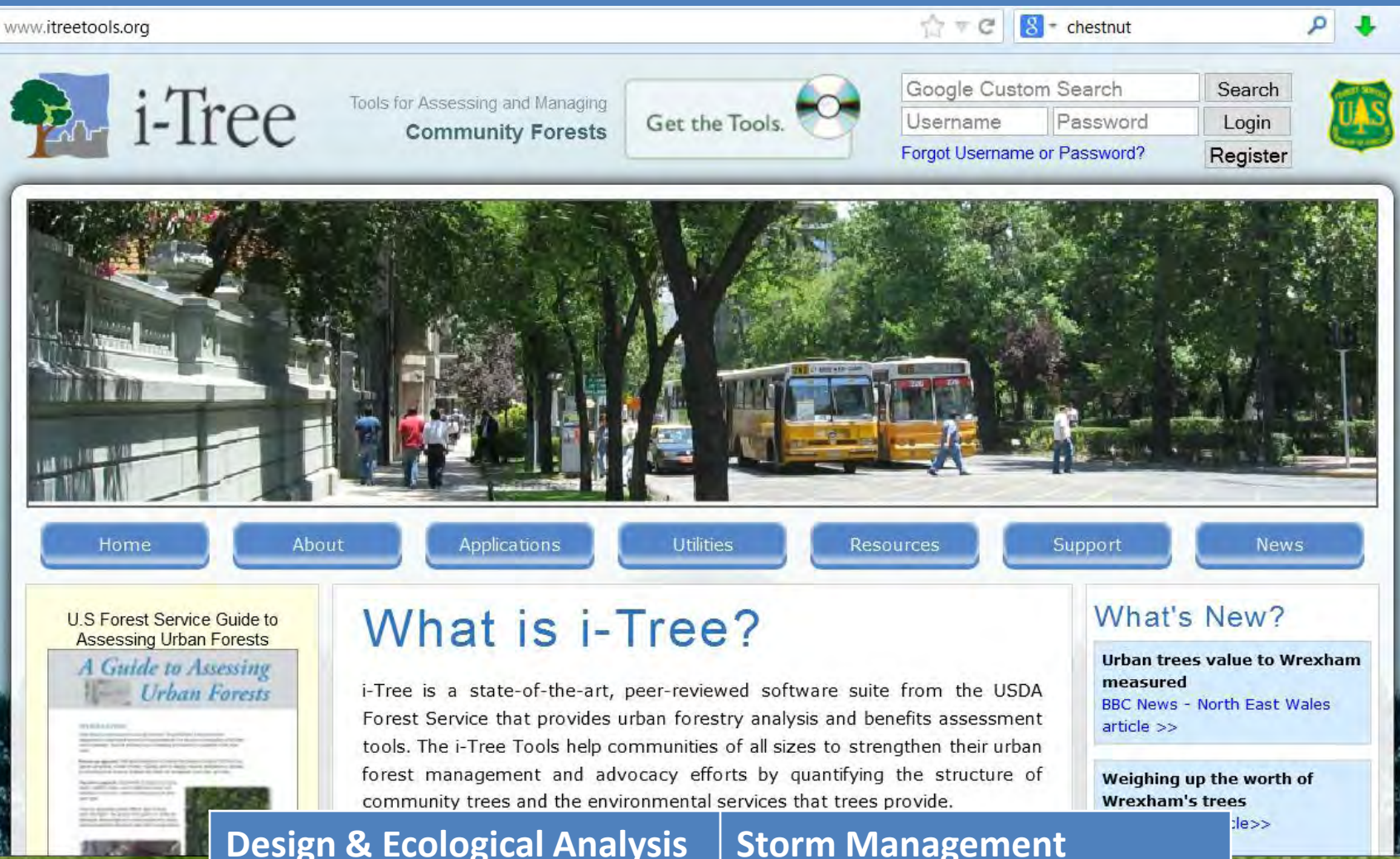
Tree-mapping is fun!

The San Diego County Tree Map
derived its algorithms from i-Tree Streets
(original called STRATUM)

i-Tree Eco: a method to integrate data w/hourly pollution & meteorology

- **i-Tree Streets**: energy, water, carbon, air quality, real estate value
- **i-Tree Hydro**: effects of trees and impervious cover on hydrology
- **i-Tree Vue**: USDA – uses National Land Cover Data – Uses ESRI Viewer
- **i-Tree Design**: simple tree by tree analysis
- **i-Tree Canopy**: conduct your own canopy assessment
- **i-Tree Species**: index values for 1,600 tree species
- **i-Tree Pest and disease detection**: evaluate corridors of problems
- **i-Tree Utilities:** monitor trees under power lines
- **i-Tree Storm:** assess for damage assessment after a storm

This is i-Tree - It has many applications and features.

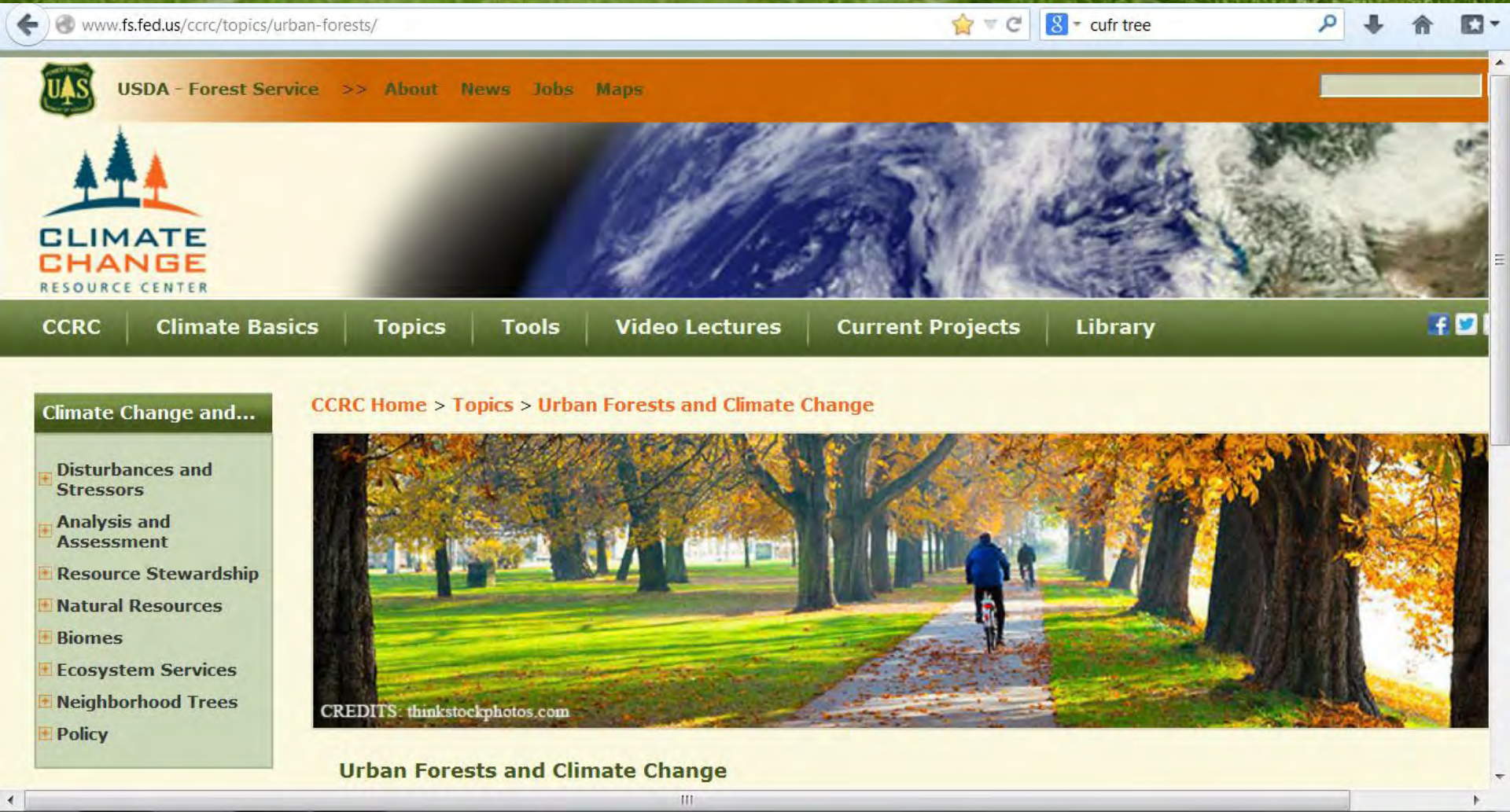


Design & Ecological Analysis	Storm Management
Hydrology	Species evaluation
Pest and Disease	Utility tracking

Who's Using i-Tree?

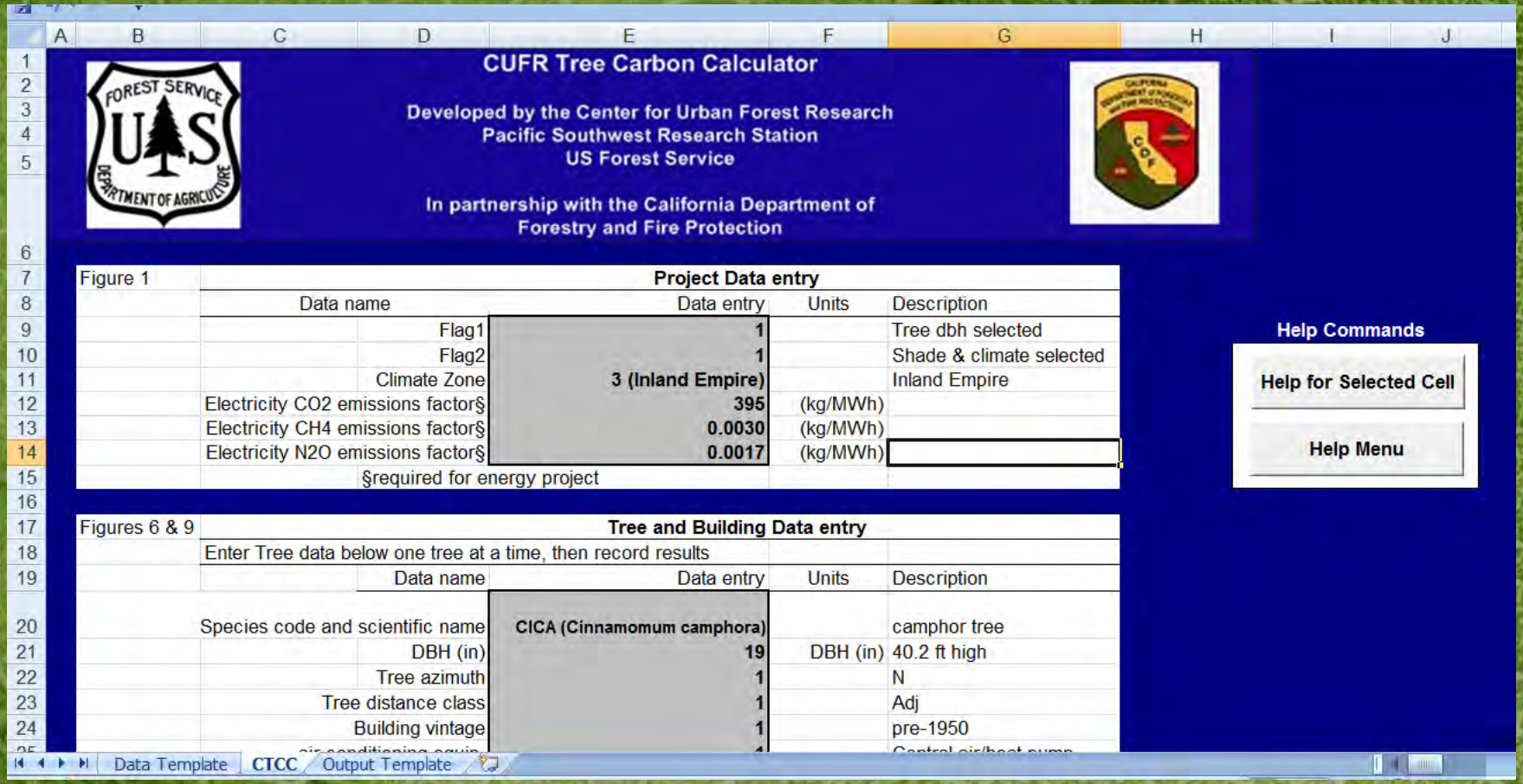
Climate Change Resource Center

http://www.fs.fed.us/ccrc/topics/urban-forests/ctcc/



USFS Tree/Carbon Calculator (under revision)

http://www.fs.fed.us/ccrc/topics/urban-forests/ctcc/



CUFR Tree Carbon Calculator

Developed by the Center for Urban Forest Research
Pacific Southwest Research Station
US Forest Service

In partnership with the California Department of Forestry and Fire Protection

Figure 1	Project Data entry			
	Data name	Data entry	Units	Description
	Flag1	1		Tree dbh selected
	Flag2	1		Shade & climate selected
	Climate Zone	3 (Inland Empire)		Inland Empire
	Electricity CO2 emissions factor§	395	(kg/MWh)	
	Electricity CH4 emissions factor§	0.0030	(kg/MWh)	
	Electricity N2O emissions factor§	0.0017	(kg/MWh)	
	§required for energy project			

Help Commands

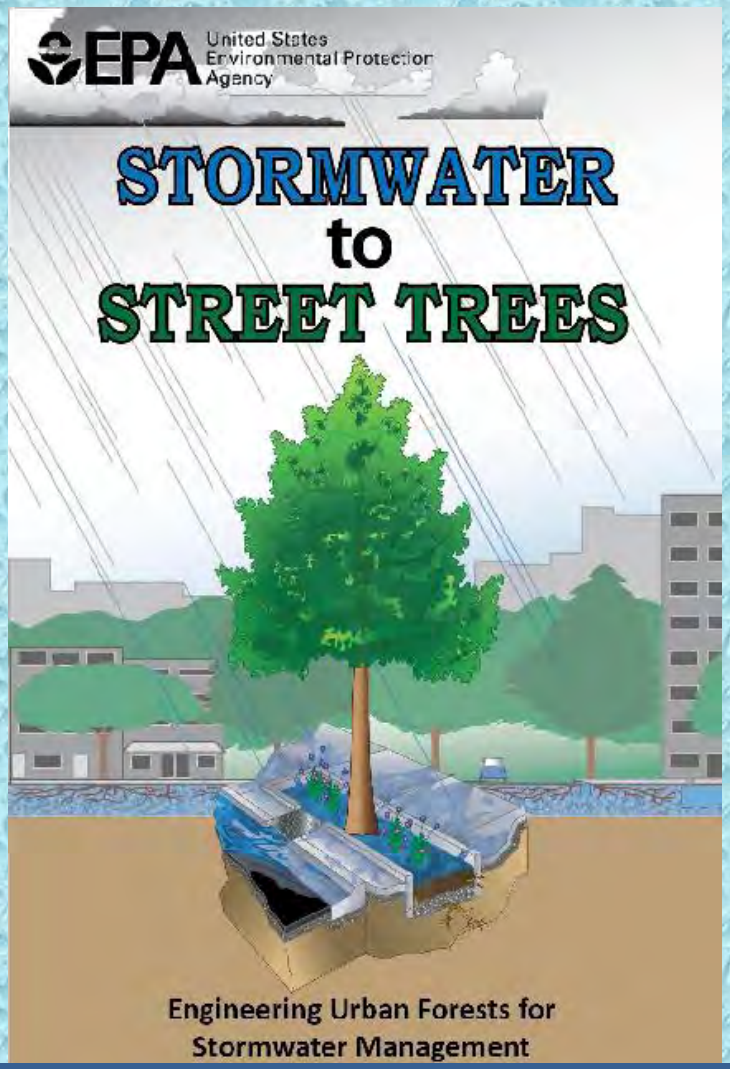
Help for Selected Cell

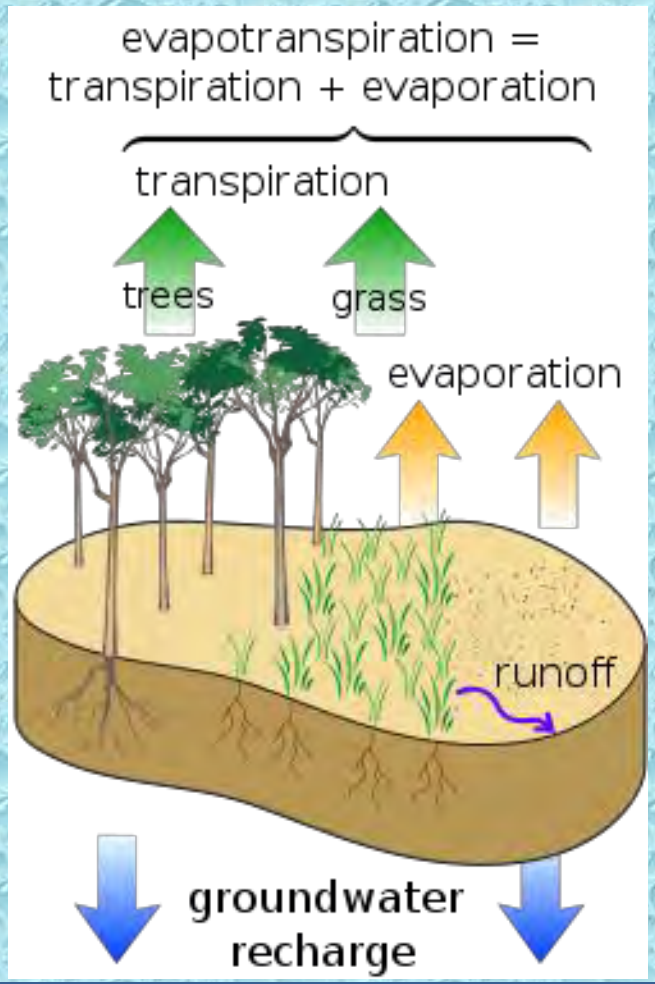
Help Menu

Figures 6 & 9	Tree and Building Data entry			
	Enter Tree data below one tree at a time, then record results			
	Data name	Data entry	Units	Description
	Species code and scientific name	CICA (Cinnamomum camphora)		camphor tree
	DBH (in)	19	DBH (in)	40.2 ft high
	Tree azimuth	1		N
	Tree distance class	1		Adj
	Building vintage	1		pre-1950

Data Template | CTCC | Output Template

Trees Mitigate WATER Runoff – Improving Water Conservation





http://water.epa.gov/polwaste/green/upload/stormwater2streettrees.pdf

Trees Save the Environment.

100 mature trees

1. catch about 416,000 gallons of rainwater per year
2. less $ needed for storm water control
3. cleaner water

McPherson, E.G., J.R. Simpson, P.J. Peper, K.I. Scott, and Q. Xiao. 2000. *Tree guidelines for coastal Southern California communities*. Sacramento, CA: Local Government Commission. 98.

Center For Clean Air Policy

Advocates for Increasing Green Infrastructure with Trees

http://ccap.org/

Trees - Important to Human Health

- 100 trees remove 12 tons of CO_2/year
- 100 trees remove 505 lbs of pollutants per year, including:
  - 139 lbs of ozone
  - 207 lbs of particulates

McPherson, E.G., J.R. Simpson, P.J. Peper, K.I. Scott, and Q. Xiao. 2000. *Tree guidelines for coastal Southern California communities*. Sacramento, CA: Local Government Commission. 98.

Trees - A Savings for Homeowners

- Save up to 34% of annual air conditioning costs
- Reduce outside temperatures by up to 5^0 F

McPherson, E.G., J.R. Simpson, P.J. Peper, K.I. Scott, and Q. Xiao. 2000. *Tree guidelines for coastal Southern California communities*. Sacramento, CA: Local Government Commission. 98.

Trees trap more of the sun's energy
than any other group of organisms on earth.
Only 0.1% of the sun's energy is trapped by organisms.
Trees account for 50% of all that energy.

It is not just a human instinct
to seek shade on a hot day

Flash Movie

Trees are so effective at using solar radiation for energy,
the science of bio-mimicry has copied trees to design collectors

Solar Shade Control Act

CA PUBLIC RESOURCES CODE SECTION 25980-25986

Under this law, property owners are prohibited from allowing their trees or shrubs to shade more than 10% of a neighbor's solar energy system between the hours of 10am and 2pm.

Any tree or shrub planted before the installation of the solar collector is exempt.

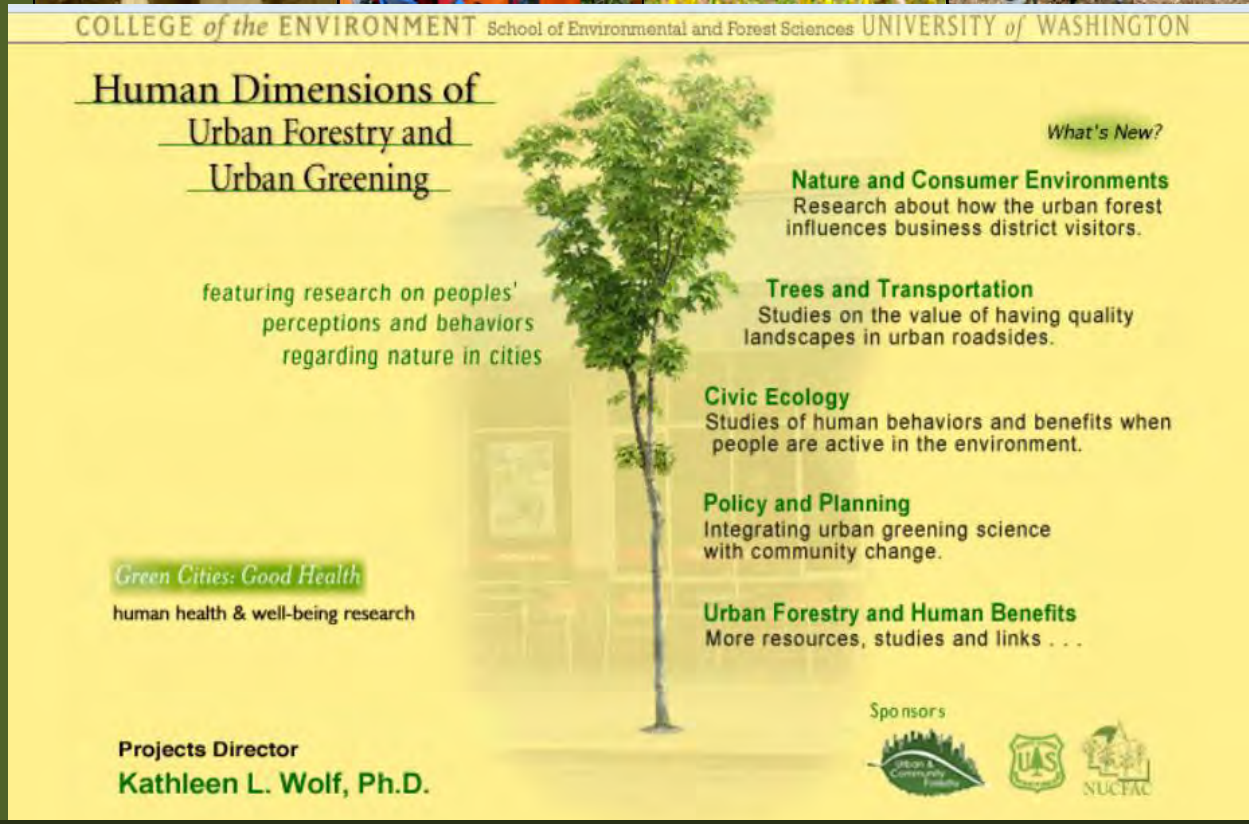
If a pre-existing tree dies, its replacement is also exempt, even if the replacement is planted after the solar collector's installation. The law also exempts trees and shrubs planted on timberland or commercial agricultural land.

urban forestry-researcher

Dr. Kathleen Wolf Ph.D.

University of Washington

explores the values of trees to Human Social Systems



http://www.naturewithin.info/

TREES
Provide Nature Experience for our Children

- Children naturally love to play in trees
- Fear of the outdoors is largely fueled by adults.

http://depts.washington.edu/hhwb/

Trees Improve Nearby Real Estate Prices

Price Increase	Condition
10%	inner city home located within 1/4 mile of a park[13]
10%	house 2 to 3 blocks from a heavily used, active recreation park[22]
17%	home near cleaned-up vacant lot[13]
20%	home adjacent to or fronting a passive park area[22]
32%	residential development adjacent to greenbelts[23]

San Diego needs many more large trees to compensate for the urban heat islands development has created.

Large scale trees in good health add great value to a property

A modest home's value is significantly increased by this magnificent olive tree.

In 1988, a US Tax Court ruled that the loss of a large Black Oak was valued at $15,000 on property valued at $164,500

Property are valued 3% - 25% more in areas surrounded by trees
People will pay 3% -7% more for a house with a large tree

Photo by Meredith French

Some neighborhoods are in dire need of trees

urban blight and lack of trees often go hand in hand

So, before going for the chainsaw...

We need to do the MATH!

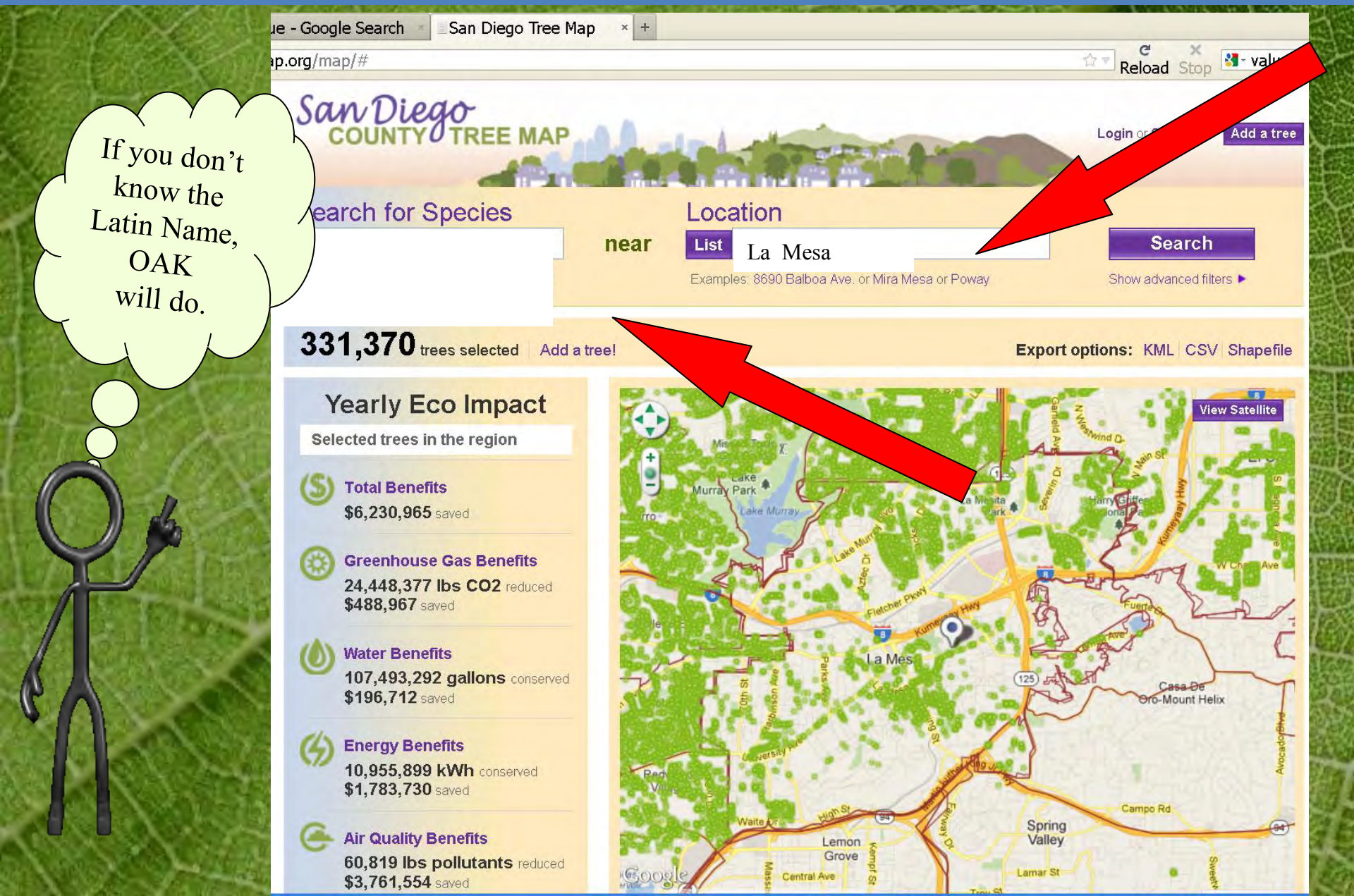
A carefully selected species,
properly pruned, well placed,
in good health,
AT MATURITY;
Can add as much as 10-20%
to a home's value

Makes a sidewalk repair seem
insignificant; shouldn't it?

Where's San Diego's Arboretum?

If you wanted to tell someone what this tree was, or where to see one, could you?

You can search for a species, location or size



San Diego COUNTY TREE MAP

Login or Sign up | Add a tree

Search for Species

nern magnolia / Magnolia grandiflora

Examples: Quercus agrifolia or Coast live oak

near

Location

List | La Mesa

Examples: 8690 Balboa Ave. c Mesa or Poway

17 trees selected | Add a tree!

Yearly Eco Impact

Selected trees in La mesa

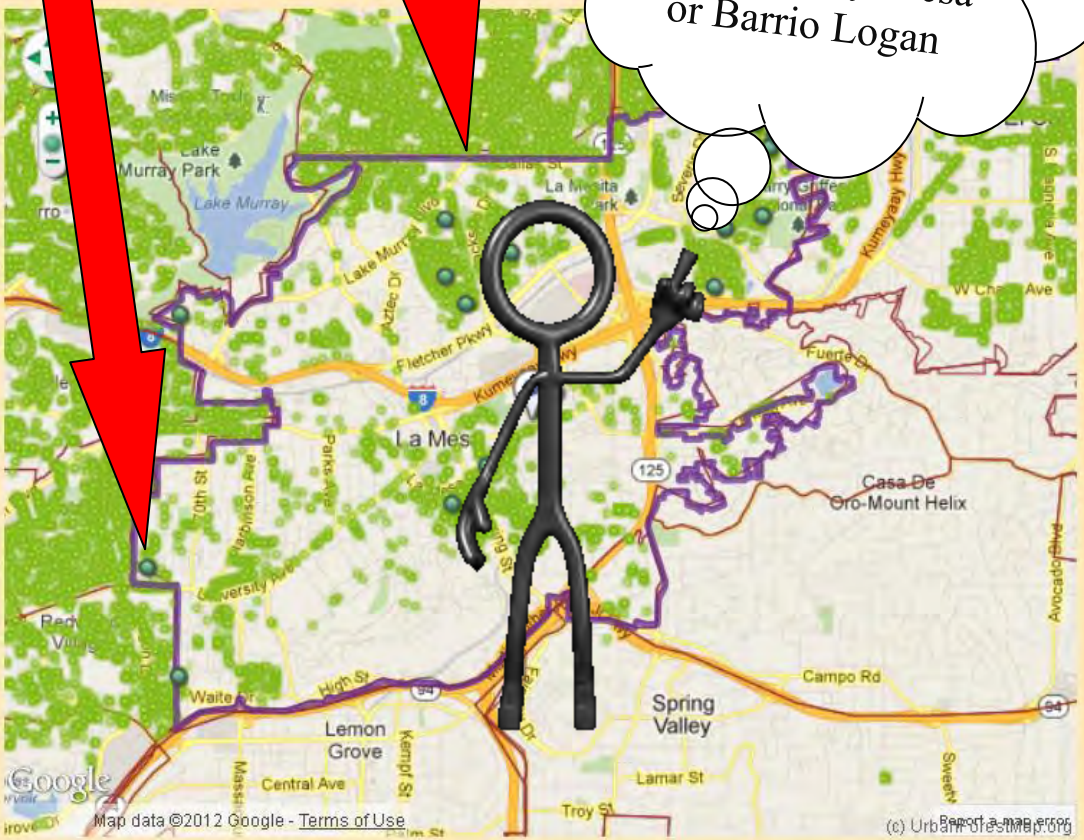
Total Benefits
$388 saved

Greenhouse Gas Benefits
1,478 lbs CO2 reduced
$29 saved

Water Benefits
6,766 gallons conserved
$12 saved

Energy Benefits
843 kWh conserved
$137 saved

Air Quality Benefits
5 lbs pollutants reduced
$209 saved



You can also search by neighborhood – like Kearny Mesa or Barrio Logan

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nern magnolia / Magnolia grandiflora

Examples: Quercus agrifolia or Coast live oak

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Search

Show advanced filters

17 trees selected | Add a tree!

Export options: KML | CSV | Shapefile

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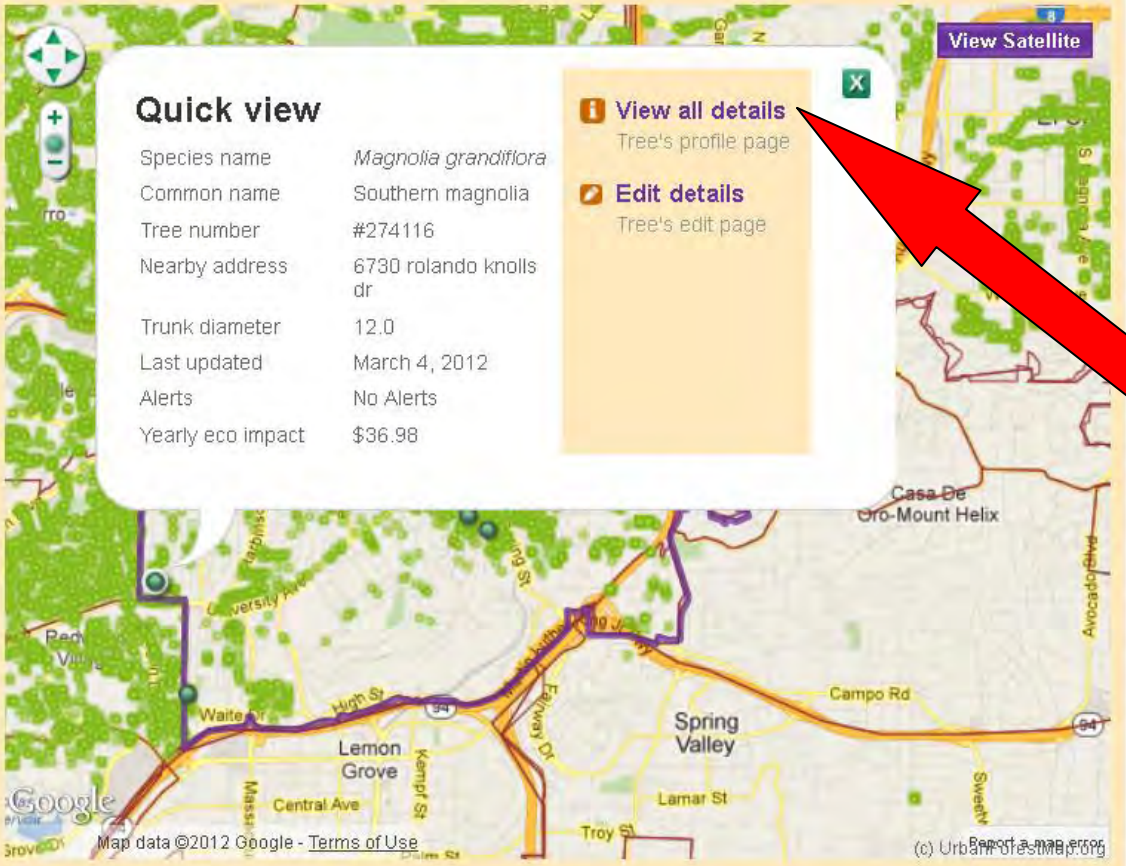


Add photos »

Tools

Add as favorite

+1 0

Like 0

Latest update

Username

Date

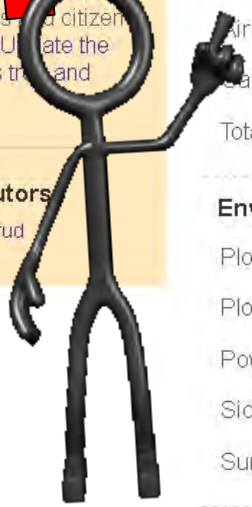
Your turn

Our database of tr… from public records … citizen foresters like you. U…ate the information for this tr… and help us grow!

Recent Contributors

03/04/2012 - Stuverud

TIP: Uploading a photograph is useful but optional.



Tree info | Edit tree

50% complete

Edit this tree »

Common attributes

Gen… …ati… #274116

…agnolia grandiflora

…uthern magnolia

…00 inches

…ssing

Missing

…ices		Value
…nergy …nserved	81.15 kWh	$13.21
Stormwater intercepted	705.58 gal	$1.29
…ir pollutants removed	0.49 lbs	$19.66
…arbon dioxide reduced	140.83 lbs	$2.82
Total Co2 stored to date	970.38 lbs	$19.41

Environment

Plot size	Missing
Plot type	Residential Yard
Powerlines overhead	Missing
Sidewalk damage	Missing
Sunset Climate Zone	23

Status

Tree condition	Excellent

Nearby Address: *

6730 rolando knolls dr

*Please note that this address is intended to be a general, not exact, reference to the location.

Comments

No comments yet!

Comment

Can the map search for BIG trees in your neighborhood?

Reload Stop

San Diego COUNTY TREE MAP

Hello, **Rivet!** | **Logout**
385 rep

Add a tree

Search for Species

All trees

Examples: Quercus agrifolia or Coa

Location

List | Balboa park

3690 Balboa Ave. or Mira Mesa or Poway

Search

Show advanced filters

272 trees selected

Export options: KML | CSV | Shapefile

TIP:
Not all trees are on our Map.
Balboa Park lacked data.

Yearly Eco

Selected trees in Balb

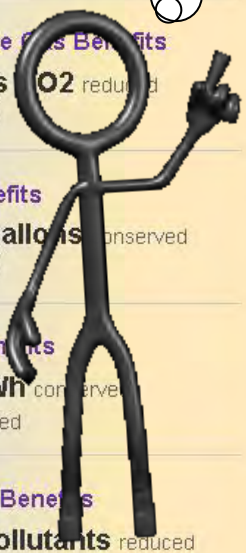
Total Benefits
$8,124 saved

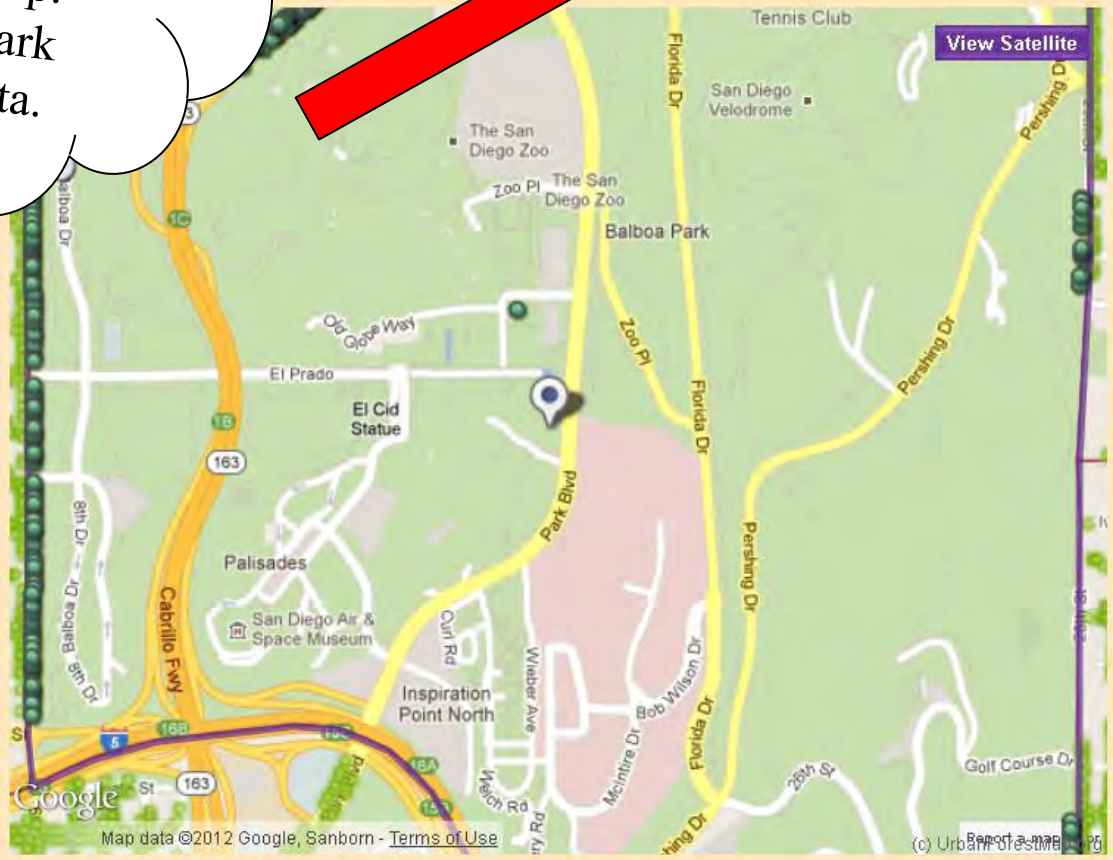
Greenhouse Gas Benefits
23,592 lbs CO2 reduced
$471 saved

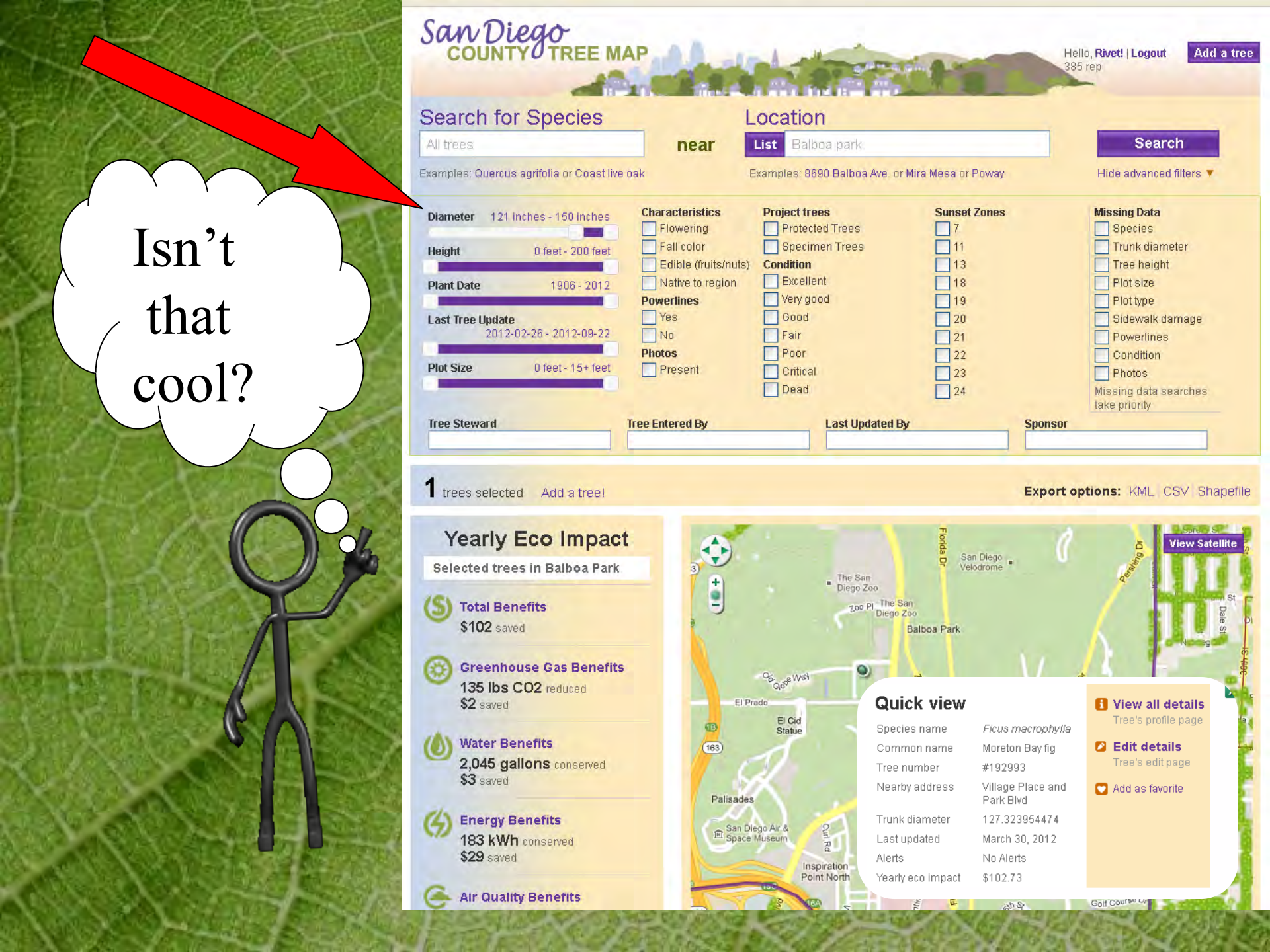
Water Benefits
158,404 gallons conserved
$289 saved

Energy Benefits
13,429 kWh conserved
$2,186 saved

Air Quality Benefits
109 lbs pollutants reduced
$5,176 saved






Isn't that cool?
San Diego COUNTY TREE MAP
Hello, Rivet! | Logout
385 rep
Add a tree
Search for Species
All trees
Examples: Quercus agrifolia or Coast live oak
near
Location
List
Balboa park
Examples: 8690 Balboa Ave. or Mira Mesa or Poway
Search
Hide advanced filters
Diameter 121 inches - 150 inches
Height 0 feet - 200 feet
Plant Date 1906 - 2012
Last Tree Update 2012-02-26 - 2012-09-22
Plot Size 0 feet - 15+ feet
Characteristics
Flowering
Fall color
Edible (fruits/nuts)
Native to region
Powerlines
Yes
No
Photos
Present
Project trees
Protected Trees
Specimen Trees
Condition
Excellent
Very good
Good
Fair
Poor
Critical
Dead
Sunset Zones
7
11
13
18
19
20
21
22
23
24
Missing Data
Species
Trunk diameter
Tree height
Plot size
Plot type
Sidewalk damage
Powerlines
Condition
Photos
Missing data searches take priority
Tree Steward
Tree Entered By
Last Updated By
Sponsor
1 trees selected
Add a tree!
Export options: KML | CSV | Shapefile
Yearly Eco Impact
Selected trees in Balboa Park
Total Benefits
$102 saved
Greenhouse Gas Benefits
135 lbs CO2 reduced
$2 saved
Water Benefits
2,045 gallons conserved
$3 saved
Energy Benefits
183 kWh conserved
$29 saved
Air Quality Benefits
View Satellite
The San Diego Zoo
San Diego Velodrome
Balboa Park
El Prado
El Cid Statue
Palisades
San Diego Air & Space Museum
Inspiration Point North
Quick view
Species name Ficus macrophylla
Common name Moreton Bay fig
Tree number #192993
Nearby address Village Place and Park Blvd
Trunk diameter 127.323954474
Last updated March 30, 2012
Alerts No Alerts
Yearly eco impact $102.73
View all details
Tree's profile page
Edit details
Tree's edit page
Add as favorite

TIP:
Coming Soon!
A simple to use
TREE ID KEY.

Over 300
species!

What if I don't know what kind of tree it is?

STAY INFORMED

www.sandiegotrees.org

HOME | LAWS & POLICY | PUBLIC RESOURCES | CAREERS | TREE INFO | BENEFITS OF TREES | FAQS

Tree Choice
- Nurseries
- Native Trees
- Nursery Stock
- Factors to Consider
- Species Selection
- Fruit Trees

Landscape Management
- Planting a Tree
- Pests and Diseases
- Tree Management and Care

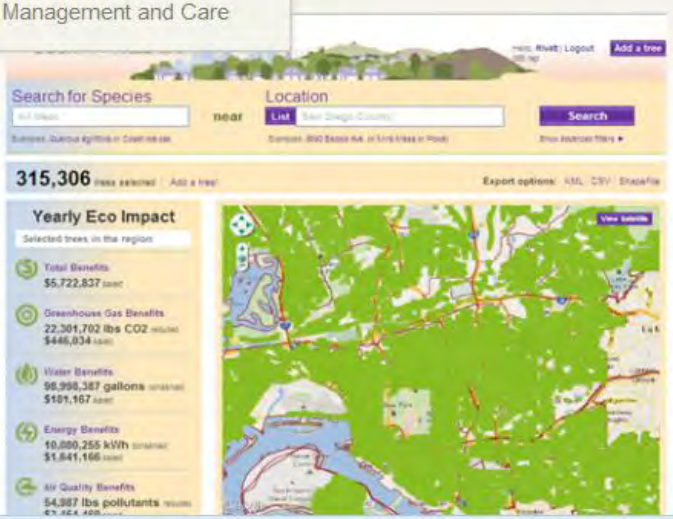
San Diego COUNTY TREES

Advice and Technical Assistance Center for Urban Forestry

Funding provided by Proposition 84 Through the California Department of Forestry and Fire Protection Urban and Community Forestry Program

911 SURVIVOR TREE HOT

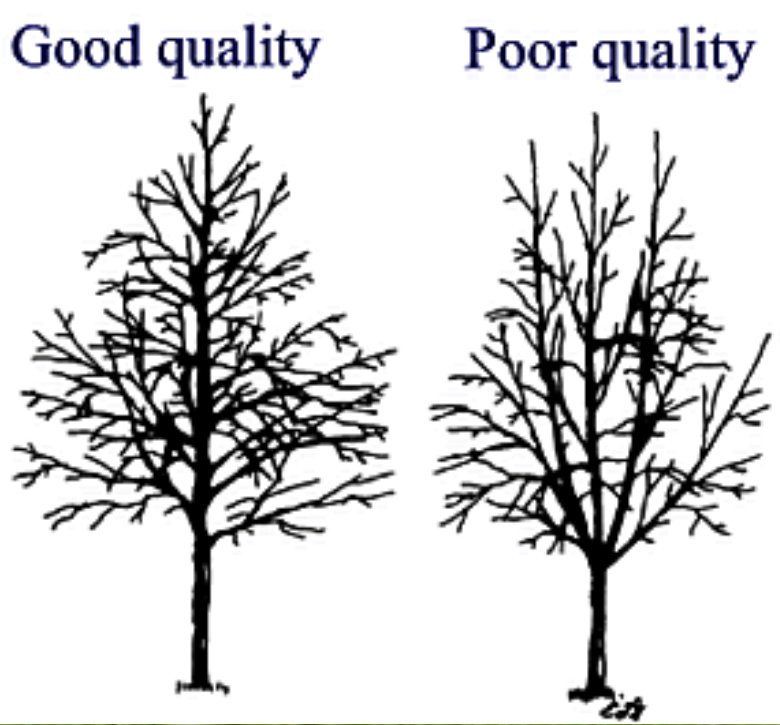
Pear tree plucked from the rubble at ground zero will return to its home at the World Trade Centre site.



What are cities doing so wrong?

Almost everything!

Can you see the difference?



More effort is needed to monitor nursery quality and site inspections

Lack of oversight at the municipal level results in increased maintenance costs and short-lived trees.

Images used with permission - Dr. Ed Gilman: University of Florida

Observe Carefully

Is this good planning or NOT?

Does your street look similar?

Continued decline of city street trees and the alarming statistic –
The average life of a downtown street tree is just 13 years.

This is a nursery-topped specimen, and they're typical <u>everywhere.</u>

It's not as good as it looked at first glance - is it?

This type of be-heading causes irreparable damage; and significantly shortens the vigor, health and life of trees.

Did you know this violates CA codes?

DO NOT TOP TREES!

Topping trees is now addressed in the California Public resources code

CAL. GOV. CODE § 53067 : California Code - Section 53067y

© Jack R. Barger/U.S. Forest Service

An elm-lined street in Detroit in 1971 (top), and the same view in 1984 after a Dutch elm disease pandemic.

We need to select tree species more wisely

- Monoculture may be aesthetic to some, but it's not very wise.
- The few remaining American Elm trees were usually solitary specimens.

UFEI is an excellent California site for tree selection

ufei.calpoly.edu/index.lasso

http://www.ufei.org/

CAL POLY
SAN LUIS OBISPO

Urban Forest
Ecosystems Institute

You can query for attributes like USDA zone, height, fall color, etc.

Explore UFEI:

- UFEI Home
  - Grant Information
  - News Listings
  - Resource Links
- SelecTree
- Urban Tree Key
- ForesTree
- CA Big Trees
- Urban Wood

Welcome to UFEI

Urban Forest Ecosystems Institute at Cal Poly

SelecTree
A Tree Selection Guide

Urban Tree Key
Identify Trees

ForesTree
Guide to Tree Health

Big Trees
California Registry

Urban Wood
Online Directory

Rethinking Native Tree Selections
(many are not drought tolerant or street-friendly choices)

Riparian trees

In Riparian areas (Native streamside and moist habitats)
Some of our native San Diego trees include:

California Sycamore (*Platanus racemosa*)
White Alder (*Alnus rhombifolia*)
Fremont Cottonwood (*Populus fremontii*)
Arroyo Willow *(Salix lasiolepis)*
California Fan Palm *(Washingtonia filifera)*

Native palms are happiest in washes – not on pavement

However, palms are NOT actually trees, they are members of the "grass" family

Some California native trees are well adapted,
but the definition of a San Diego "native tree" is fuzzy.

Is a Torrey Pine native to El Cajon, or is a Redbud native to Coronado?

Non-native trees are often better adapted to our urban environment, than so called “native trees”

This is partly a result of our changing climate, and our lack of indigenous trees.
Our higher elevation native trees are not adapted to coastal regions.

Myrtaceae: Angiosperm Phylogeny Website

Acca, *Accara*, *Acmena*, *Acmenosperma*, *Actinodium*, *Agonis*, *Allosyncarpia*, *Amomyrtella*, *Amomyrtus*, *Angasomyrtus*, *Angophora*, *Archirhodomyrtus*, *Arillastrum*, *Astartea*, *Asteromyrtus*, *Austromyrtus*, *Backhousia*, *Baeckea*, *Balaustion*, *Barongia*, *Basisperma*, *Beaufortia (Myrtaceae)*, *Blepharocalyx*, *Callistemon*, *Calothamnus*, *Calycolpus*, *Calycorectes*, *Calyptranthes*, *Calyptrogenia*, *Calythropsis*, *Calytrix*, *Campomanesia*, *Carpolepis*, *Chamelaucium*, *Chamguava*, *Choricarpia*, *Cleistocalyx*, *Cloezia*, *Conothamnus*, *Corynanthera*, *Cupheanthus*, *Darwinia*, *Decaspermum*, *Eremaea*, *Eucalyptopsis*, *Eucalyptus*, *Eugenia*, *Gomidesia*, *Heteropyxis*, *Hexachlamys*, *Homalocalyx*, *Homalospermum*, *Homoranthus*, *Hottea*, *Hypocalymma*, *Kania*, *Kjellbergiodendron*, *Kunzea*, *Lamarchea*, *Legrandia*, *Lenwebbia*, *Leptospermum*, *Lindsayomyrtus*, *Lophomyrtus*, *Lophostemon*, *Luma*, *Lysicarpus*, *Malleostemon*, *Marlierea*, *Melaleuca*, *Meteoromyrtus*, *Metrosideros*, *Micromyrtus*, *Mitranthes*, *Mitrantia*, *Monimiastrum*, *Mosiera*, *Myrceugenia*, *Myrcia*, *Myrcianthes*, *Myrciaria*, *Myrrhinium*, *Myrtastrum*, *Myrtella*, *Myrteola*, *Myrtus*, *Neofabricia*, *Neomitranthes*, *Neomyrtus*, *Ochrosperma*, *Octamyrtus*, *Osbornia*, *Paramyrciaria*, *Pericalymma*, *Phymatocarpus*, *Pileanthus*, *Pilidiostigma*, *Piliocalyx*, *Pimenta*, *Pleurocalyptus*, *Plinia*, *Pseudanamomis*, *Psidium*, *Purpureostemon*, *Regelia*, *Rhodamnia*, *Rhodomyrtus*, *Rinzia*, *Ristantia*, *Scholtzia*, *Siphoneugena*, *Sphaerantia*, *Stereocaryum*, *Syncarpia*, *Syzygium*, *Tepualia*, *Thryptomene*, *Tristania*, *Tristaniopsis*, *Ugni*, *Uromyrtus*, *Verticordia*, *Waterhousea*, *Welchiodendron*, *Whiteodendron*, *Xanthomyrtus*, *Xanthostemon*

Nursery Quality is Critical for long-lived, low maintenance urban trees

Preventive structural pruning the first 3-5 years of a tree's life, reduces long-term and expensive corrective pruning later

Small container sizes are generally healthier

1 gallon –
or less is best

5 gallon is good

15 gallon may sulk

Large boxed trees may bolster the economy, but seldom the client

Urban Tree Foundation – Tree non-profit in Visalia, CA

Strategies for Growing a High-Quality Root System, Trunk, and Crown in a Container Nursery

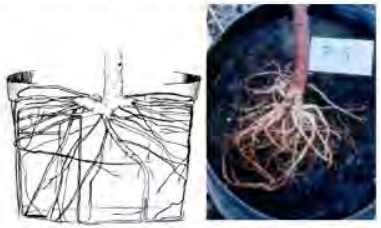
Companion publication to the *Guideline Specifications for Nursery Tree Quality*

helpful tips for healthier city trees

D. Roots

1. The uppermost roots or root collar (root crown) shall be within the upper 2 inches of the soil media (substrate).

2. The root collar and the inside portion of the root ball shall be free of defects, including circling, kinked, and stem girdling roots. Soil removal near the root collar may be necessary to inspect the aforementioned root defects.



Desirable

Not Desirable

3. Roots on the periphery and bottom of the root ball shall be less than 1/4 inch in diameter (1/8 inch is preferred). The maximum acceptable root diameter on the periphery should be indicated.

Desirable

Not Desirable

Urban Tree Foundation All rights reserved.

California Department of Forestry and Fire Protection
Urban and Community Forestry Program

Modern arboricultural planting guidelines
are not incorporated into old city codes

Don’t dig a deep hole, dig a wide one.

Not only is it better for the tree, it’s a lot easier too…

What amendments are the best to use when planting trees?

NONE OF THEM

TOP SOIL BLEND
TOP SOIL BLEND
TOP SOIL BLEND

Soil Amendments
Custom Mix

Maxicrop
FERTILIZER
FERTILIZER

Back to Earth
BONE MEAL
Maxicrop
PULVERIZED LIMESTONE

Stakes work best

if you don't use them…

Image credit: Andrew Koeser, International Society of Arboriculture, Bugwood.org

A tale of two Liquidambars

but why are they growing so differently?

What makes one tree valuable, and another one a nuisance?

Pssst….
There's lots of secrets,
but probably not what you're thinking.

The amazing thing
is they're growing right next door
to each other…

Surface roots are NOT always the tree's fault

Tree irrigation should be adjusted outward as tree roots grow

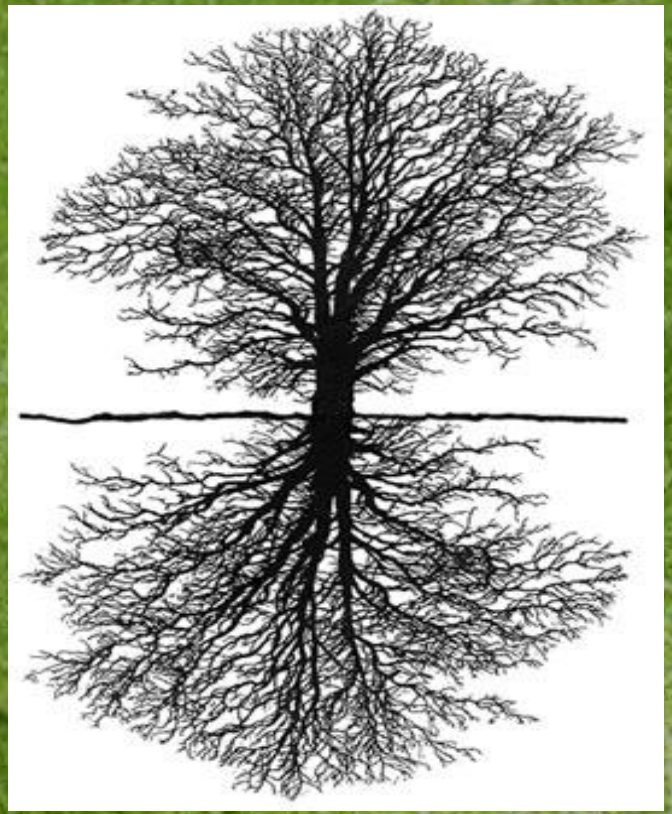
Photo: Gerald Holmes, Valent USA Corporation, Bugwood.org

1572736

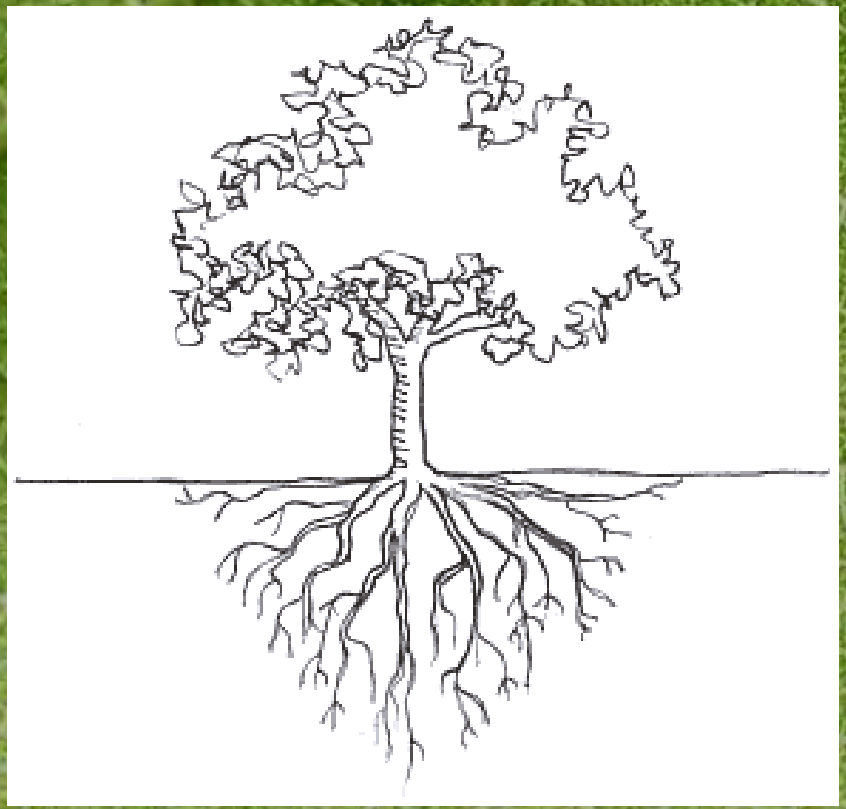
Trees need infrequent deep watering.
Surface watering invites shallow root development.

Do you recall learning about how tree roots - mirror their canopies?

Like this?

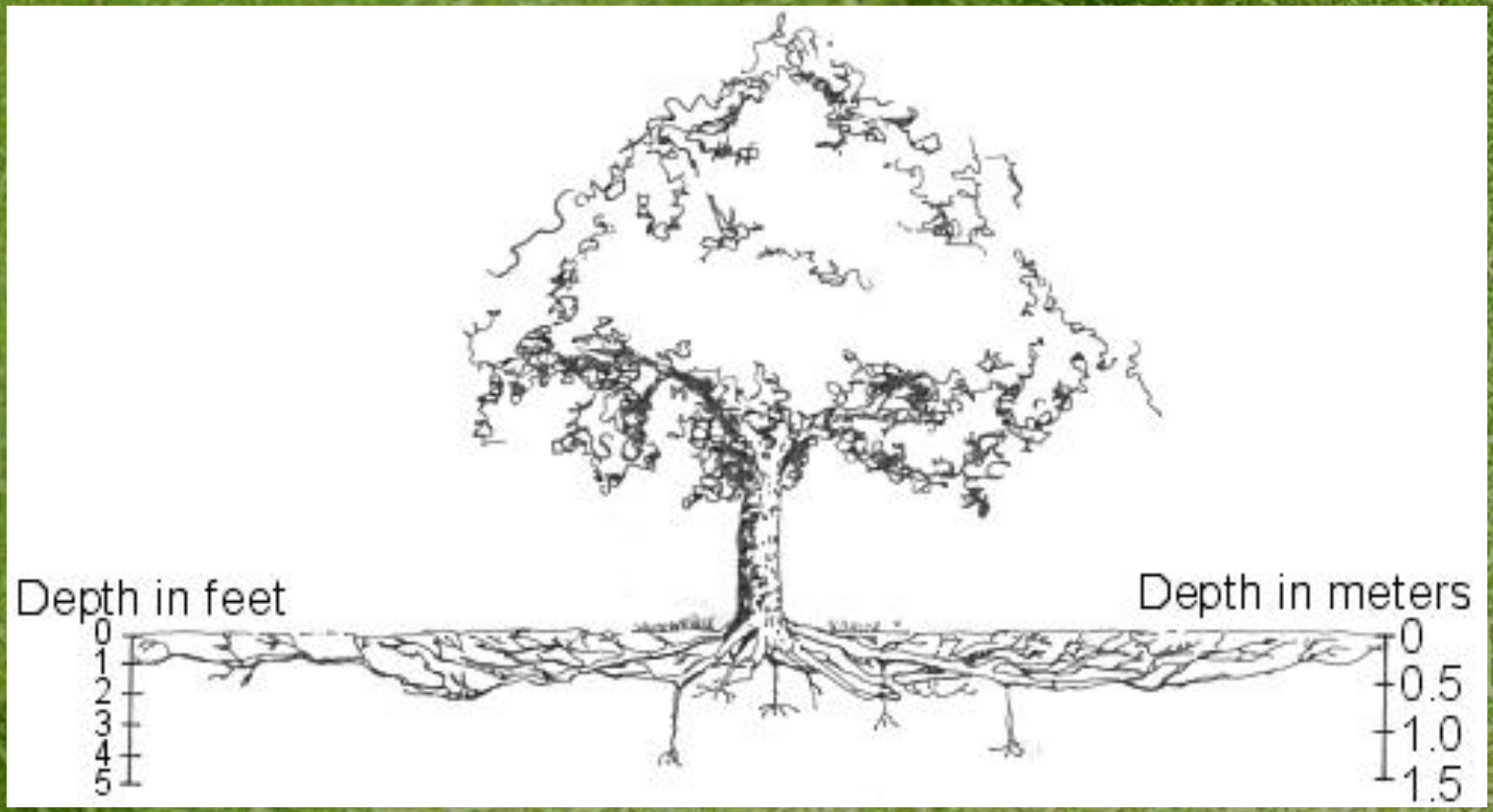


Or this?



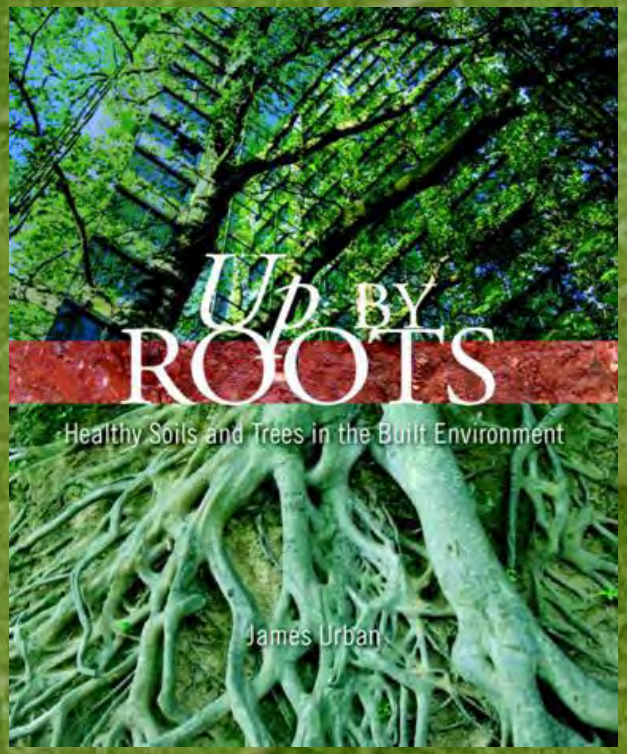
IT WAS WRONG!

Roots want to spread wide - not deep



Remember where the roots should be?

The science is changing, and too fast for most municipal codes.



If you'd like to read more about this subject, Landscape Architect James Urban wrote an excellent volume about trees, soils and nursery stock.

Landscape architects

- Have pressure to create instant effects
- They are primarily designers, often lacking horticultural knowledge
- Often follow outdated municipal codes - without questioning them

professional oversight is needed

Nurseryman

- The bottom line is selling what customers want
- An unwary public still seeks out “lollipops”
- Root pruning is a new concept, but it clearly affects tree longevity

The State of San Diego County Trees

American Forest
Urban Ecosystem Analysis
July 2003 report

Between 1985 and 2002
the San Diego Region

Lost 29% of its tree cover!

Things Have Worsened Since Then

Just over 100 years ago

Balboa Park didn't have many trees…

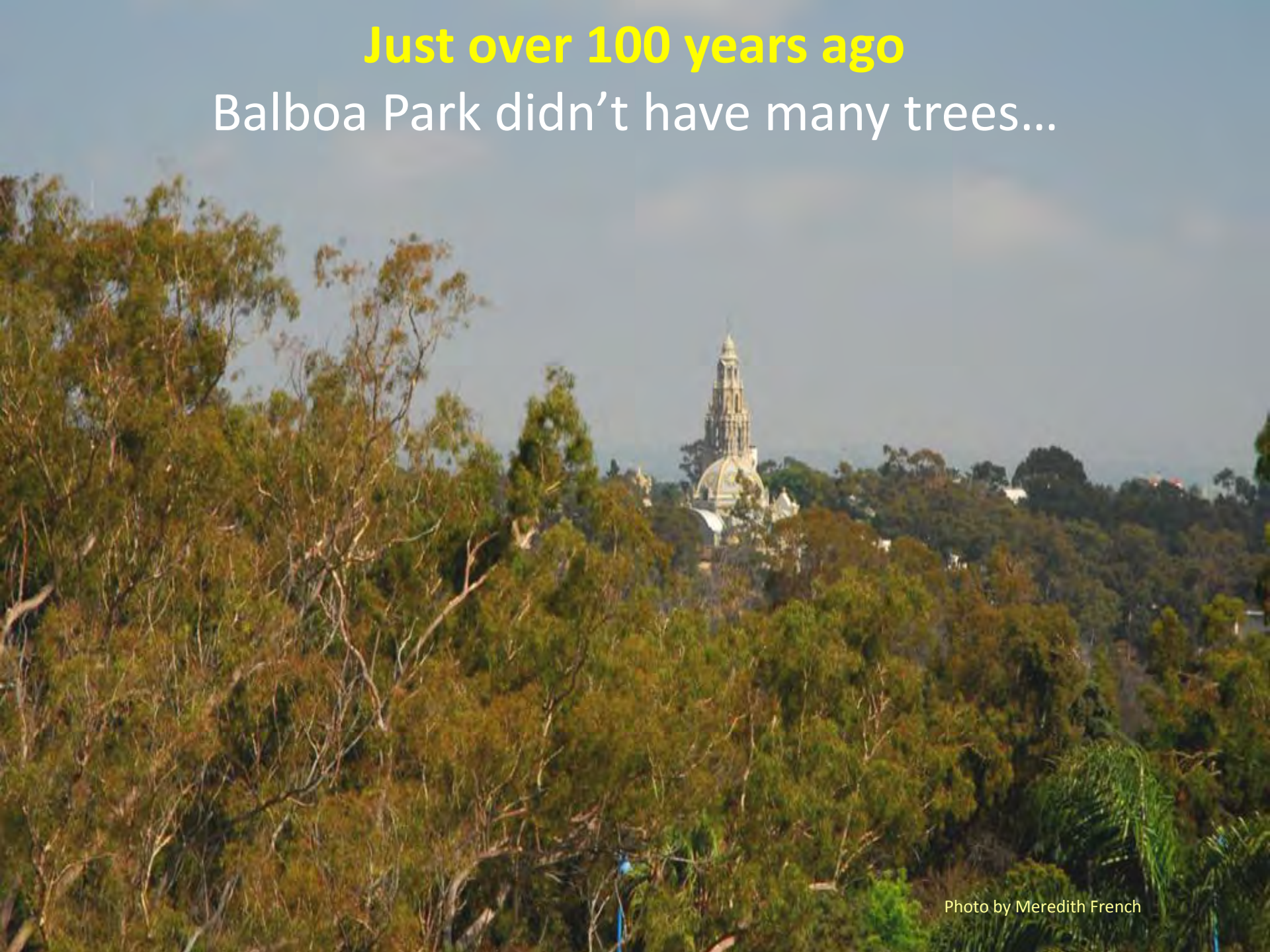
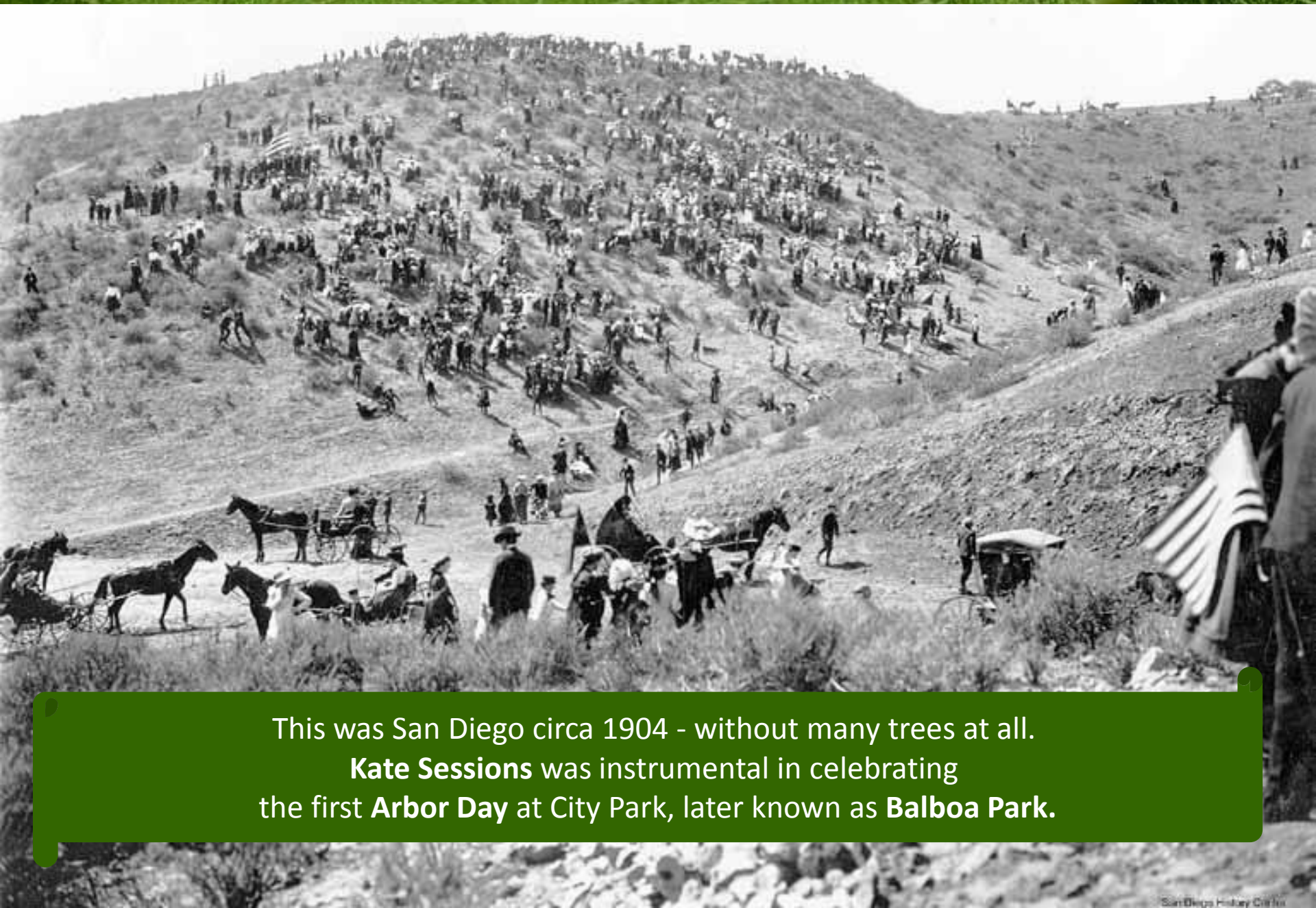


Photo by Meredith French



This was San Diego circa 1904 - without many trees at all.
Kate Sessions was instrumental in celebrating
the first **Arbor Day** at City Park, later known as **Balboa Park.**

California Municipal Forest Health Threat Assessment

July 2012

Report cards and recommendations for 30 California municipal forests

How stable is your city forest?

What are the chief health threats?

How can you prevent them?

Urban Ecosystems and Processes Team
Pacific Southwest Research Station
USDA Forest Service
1731 Research Park Dr.
Davis, CA 95618
Telephone: 530-759-1730
http://www.fs.fed.us/psw/programs/uesd/uep

Lauren Kotow
E. Gregory McPherson

Balboa Park scored lowest in the state for health threats

Final Grades

Table 13—Final grades for all cities (listed alphabetically)

City	Species/Size grade	Age grade	Pest grade	Asset grade	Final grade
Anaheim	A+	B	A-	A	A
Azusa	A+	B	B	B	B+
Balboa Park	F	D+	C	F	D-
Brentwood	A+	B+	A+	A+	A+
Brisbane	A-	A-	B+	B-	A-
Burbank	C	D+	B	A-	B-
Chula Vista	B-	A	A-	C-	B
Coronado	D-	B-	A-	C	C-
Elk Grove	A-	B	B-	B+	B
Eureka	A-	B	A	B-	B-
Fresno	B	D+	B-	A	B
Glendora	A	D+	B	A-	B
Irvine	F	B+	C+	D	C-
La Canada Flintridge	D	C-	F	D-	D
Oakley	B	F	D	C	C-
Palm Desert	B	D-	A	A	B+
Roseville	D-	B+	D+	C	C
Sacramento	C+	A+	D-	B	B
San Dimas	B+	B	B-	C-	B
San Jose	B+	B-	B	B	B
San Luis Obispo	A	A-	C-	B-	B
San Mateo	B	B-	D+	B-	B
Santa Clarita	C+	B-	D+	D+	C+
Santa Monica	B+	C-	A	A-	B+
South Pasadena	B	D-	B+	B-	B
Sun Valley	C	A-	A-	B-	B
Sunnyvale	B	B	B+	A	B+
West Sacramento	B+	C	D+	C-	C
Woodland	B	A-	C	A-	B-

Few San Diego parks have any tree inventories,
but ANY San Diego county tree can be entered in our tree map.

1. Carlsbad
2. Chula Vista
3. Coronado
4. Del Mar
5. El Cajon
6. Encinitas
7. Imperial Beach
8. La Mesa
9. Oceanside
10. Poway
11. San Diego
12. Santee
13. Solana Beach
14. Vista

San Diego is considered a HOT SPOT in the California Floristic Province

It is a dubious honor…

To qualify as a hotspot,

a region must meet two strict criteria:

1. It must contain at least 1,500 species of vascular plants (> 0.5 % of the world's total)
2. **It has to have lost at least 70% of its original habitat.**

Goals established for the San Diego Region
July 2003 report - American Forests

25% tree canopy overall
30% suburban residential
20% urban residential
10% central business districts

Our region's cities are hurting financially.
Tree planting and preservation are a low priorities.
Code compliance is nearly non-existent.
Oversight staff are laid off everywhere.

No Investment, No Return.

Estimates today are that our tree canopy hovers precariously between 4%-8%

Why don't I get more respect?

What can urban planners do to help?

1. **Advocate an updated canopy assessment**
2. Chart trees into the tree map to bolster awareness about ecosystem values
3. **Re-think tree species selection**
4. Specify nursery quality and INSPECTION
5. **Mandate oversight in planting and early pruning to save money and encourage longer-lived trees**

It’s a good thing trees fight back,
but they also need our help.
photo by Graham Horn

Urban Forestry - it does matter!

And thanks for adding new trees into our map!

Robin Y Rivet – Urban Forester/ISA Certified Arborist
robin.rivet@sandiegotreemap.org
619.994.5981