



i-Tree Streets: Inventorying and Assessing Street Tree Populations

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Acknowledgements

🌳 City of Springfield for hosting this workshop

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🌳 Northern Tree Service

Thank you!

April 18, 2007

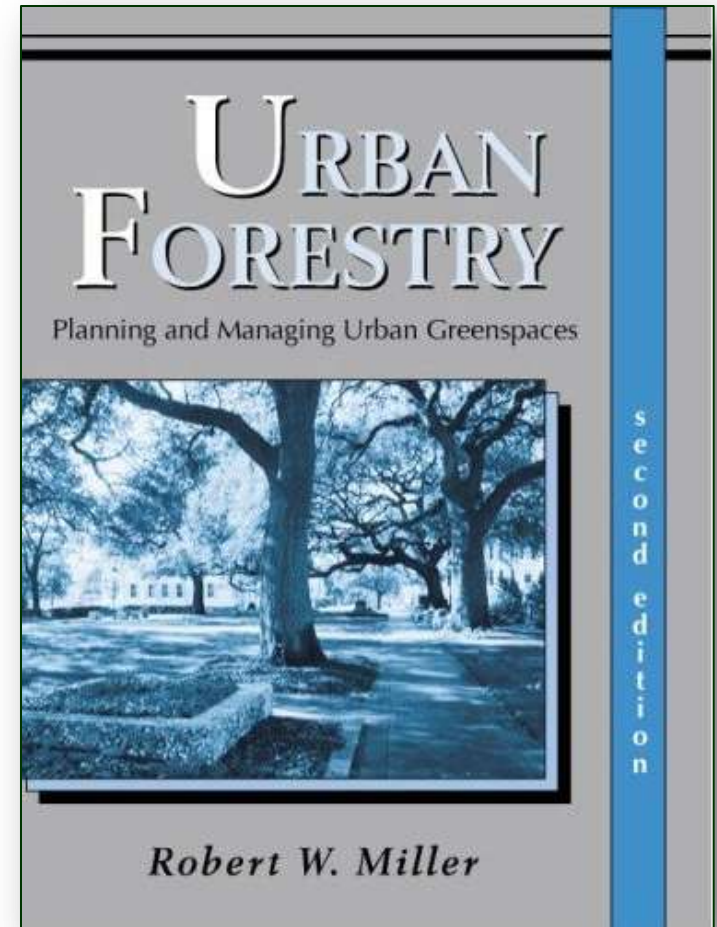
Maybe Only God Can Make a Tree, but Only People Can Put a Price on It

- 🌳 Public health
- 🌳 Energy conservation
- 🌳 Storm water mgt.
- 🌳 Pollution mitigation
- 🌳 Carbon strategies
- 🌳 Climate change
- 🌳 Green job creation...



Improving Management Decision Making

🌳 *“The primary objective of a good street management plan should be to maximize public benefits from street trees and to minimize public expense in achieving these benefits”*



i-Tree Streets: Information for Better Tree Management

Input:

- Conduct new inventory
- Sample street segment inventory (3-6%)
- Or import an existing inventory data
- Price adjustments, mgmt. costs

Output:

- Graphs, charts, tables

Benefit:

- Baseline data to more effectively manage & advocate for the street tree resource

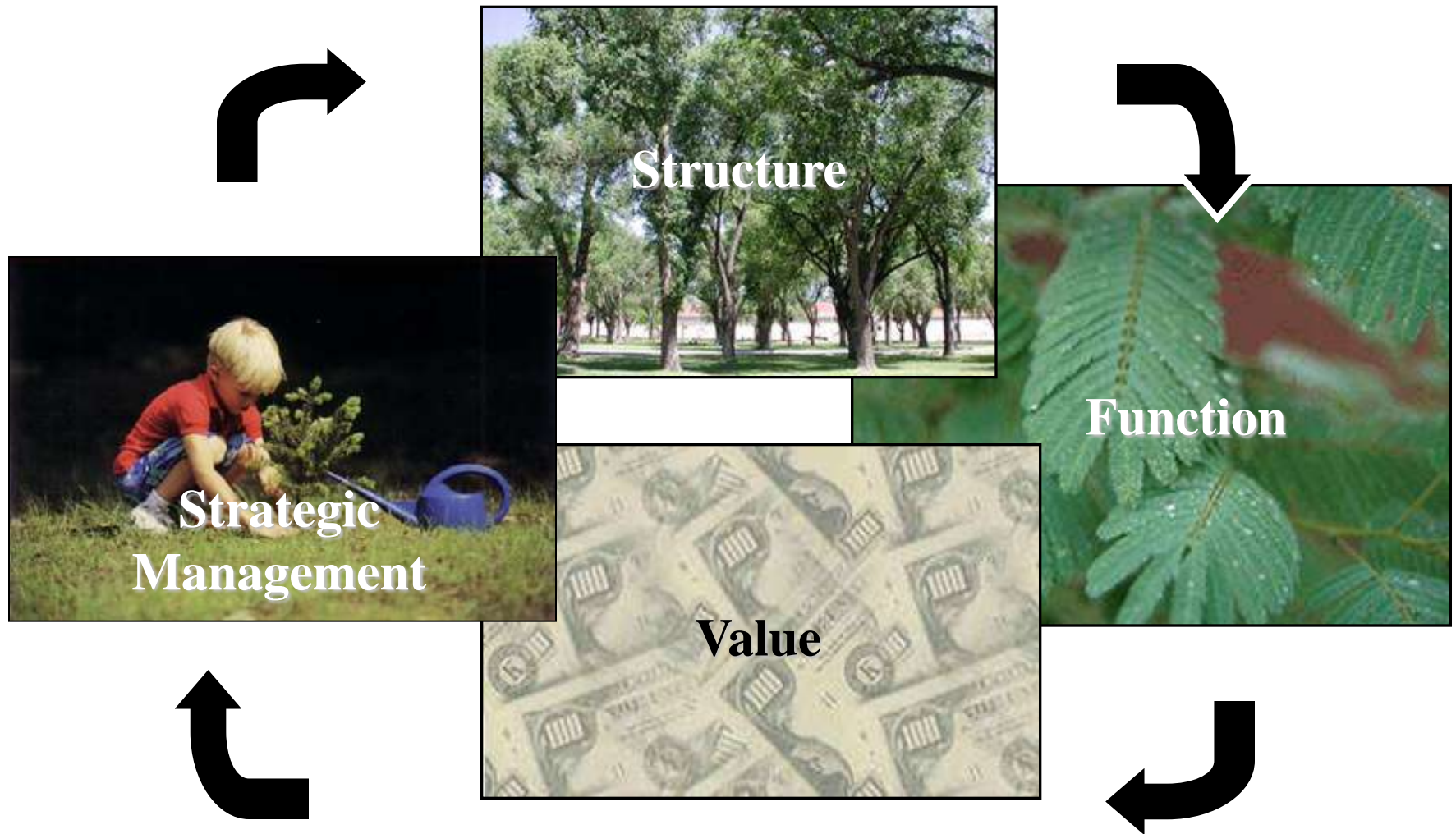


What makes Streets different?

- 🌳 Street trees, not entire urban forest
- 🌳 Costs, not only benefits
- 🌳 Management tool, not only for advocacy
- 🌳 Tree inventory-based, not GIS
- 🌳 Answers the question: do the accrued benefits of street trees outweigh the cost of their management?



Benefit-Based Approach



Assessing Street Tree Populations

Streets assesses:

- Structure
- Function
 - ✓ Energy
 - ✓ Air pollution
 - ✓ Stormwater *
 - ✓ Carbon
 - ✓ Aesthetic Value *
- Value
- Management needs *
- Pest Detection *
Module (Beta)



Conserving Energy



Image courtesy of the Center for Urban Forest Research

Reducing Atmospheric Carbon Dioxide



Reducing Stormwater Runoff

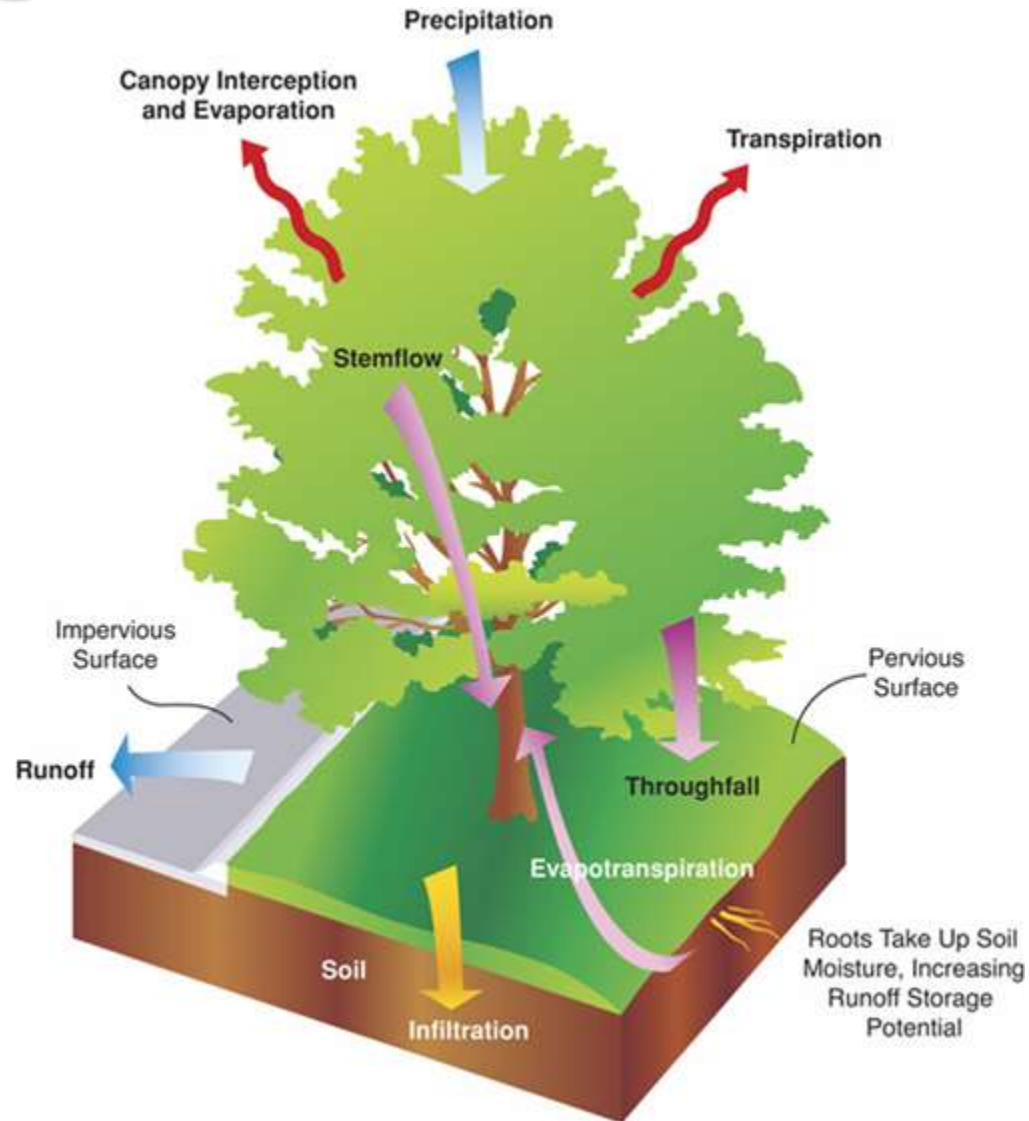


Image courtesy of the Center for Urban Forest Research

Improving Air Quality

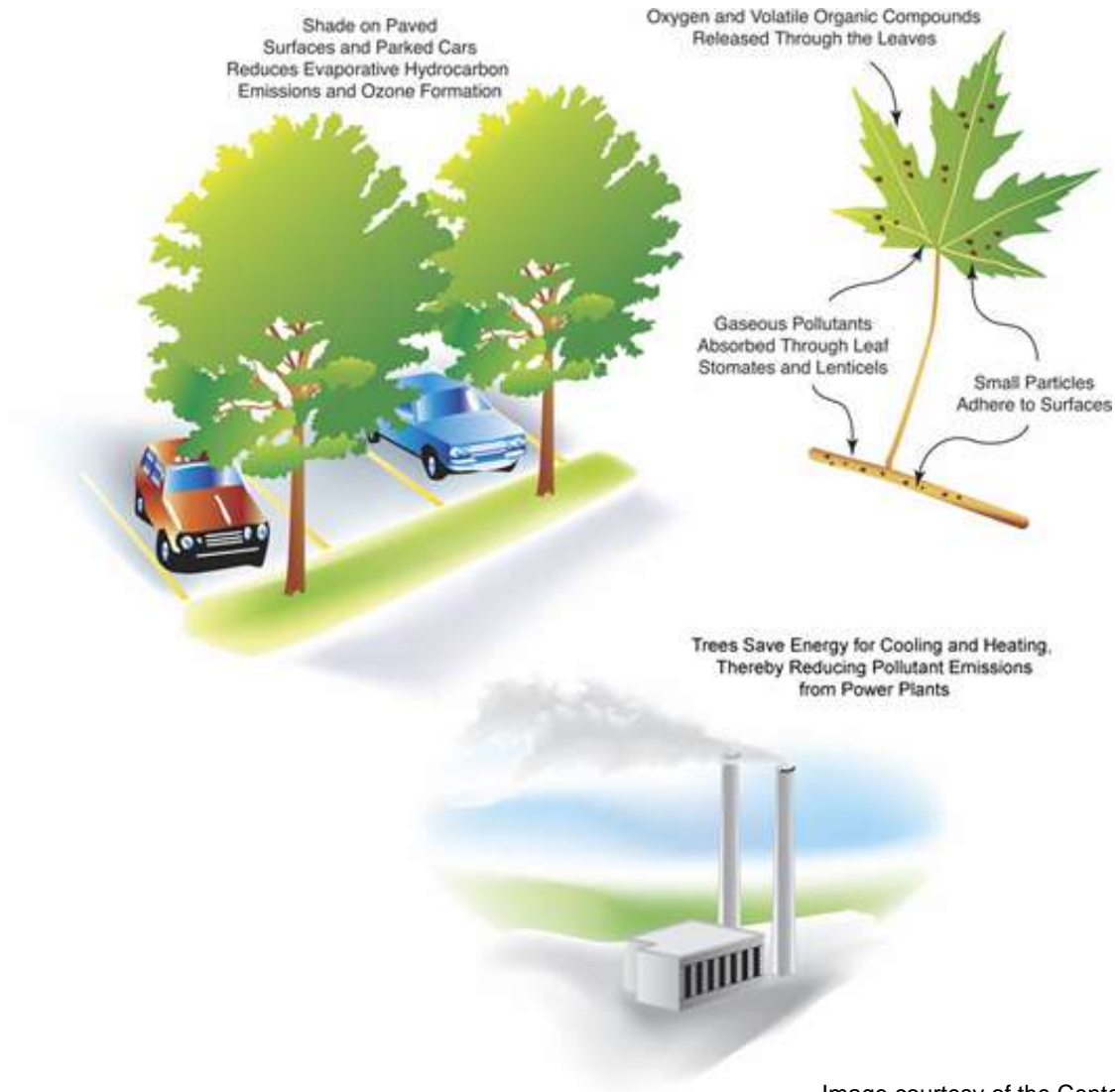


Image courtesy of the Center for Urban Forest Research

Aesthetic and Other Benefits



Streets Background & Methods



To demonstrate new ways that trees add value - quality of life - to communities.

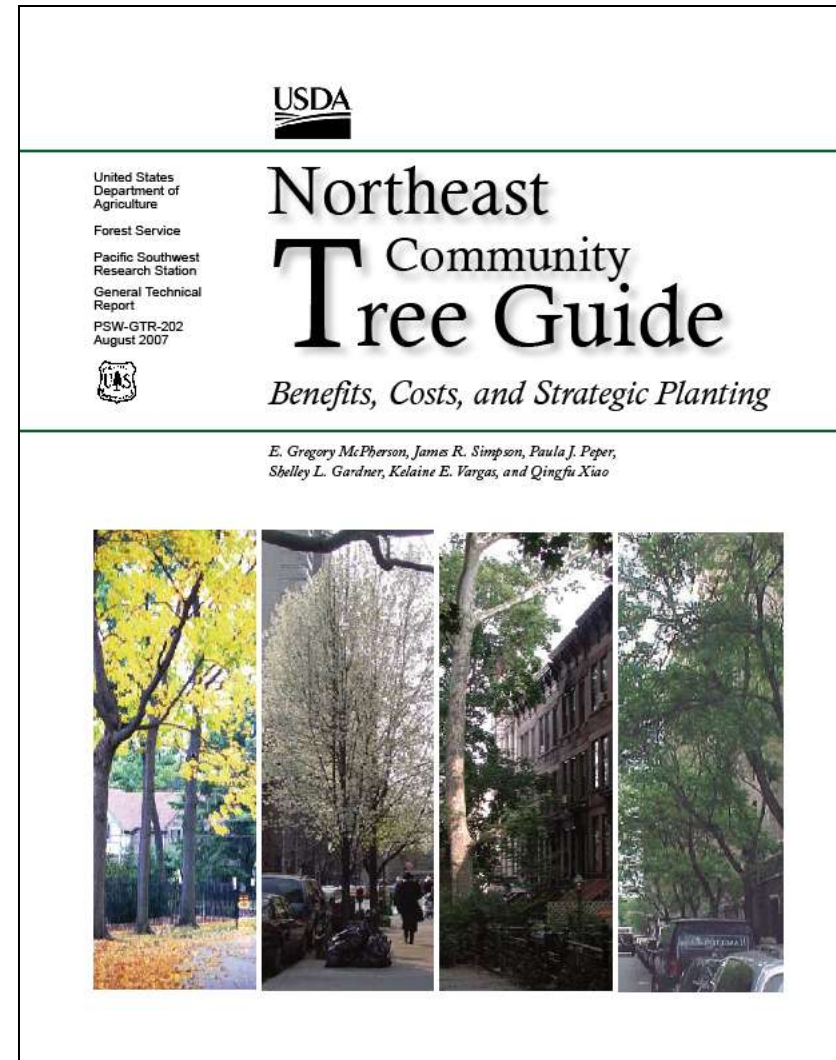
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USDA Forest Service
PSW Research Station



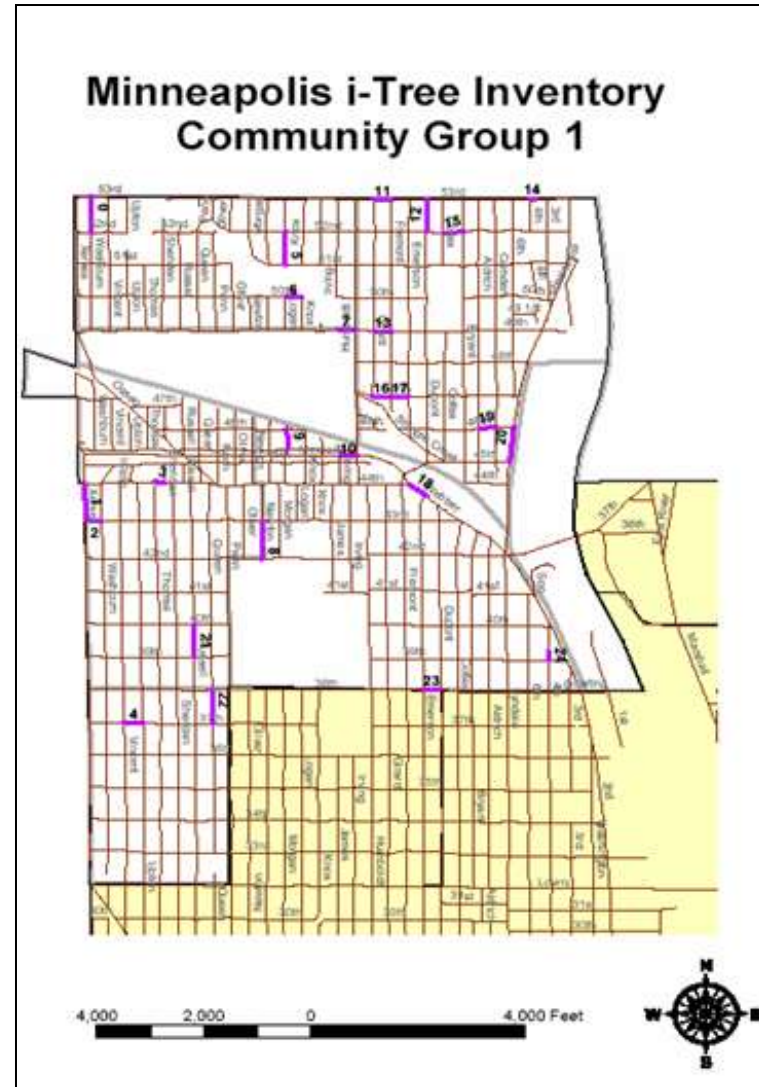
Streets Foundation: Reference City Research

🌳 Regional ***Tree Guide*** studies to develop growth models of representative street trees and their dimensions as a basis for Benefit-Cost Analysis.



www.treesearch.fs.fed.us/pubs/25927

Sample Based Assessment



Street Segment Example



Research Process—Functional Analysis

🌳 Models use structural data – (size at various ages).

🌳 To determine magnitude of annual benefits:

- Energy saved
- Atmospheric CO₂ reduction
- Air pollutants removed
- Rainfall intercepted
- Aesthetics & other



Research Process—Structural Analysis

- 🌳 Data collection 25 field measurements for each tree
- 🌳 900 trees, 20 predominant regional species
 - age, species, dbh, ht., crown dia., condition, digital photos, foliar biomass samples, etc.
- 🌳 Calculate leaf area and foliar biomass
- 🌳 Regression models predict growth.



Define Species

Species Code	Common Name	Scientific Name	Assigned Sp. Value	Non-Tree?
ACSA1	Silver maple	Acer saccharinum	ACSA1	<input type="checkbox"/>
ACSA2	Sugar maple	Acer saccharum	ACSA2	<input type="checkbox"/>
AEGL	Ohio buckeye	Aesculus glabra	ACPL	<input type="checkbox"/>
AEHI	Horsechestnut	Aesculus hippocastan...	BDL OTHER	<input type="checkbox"/>
AIAL	Tree of Heaven	Ailanthus altissima	BDL OTHER	<input type="checkbox"/>
AL	Alder	Alnus species	MA2	<input type="checkbox"/>
ALJU	Mimosa	Albizia julibrissin	BDS OTHER	<input type="checkbox"/>
BDL OTHER	Broadleaf Decid...	Broadleaf Deciduous ...	FRPE	<input type="checkbox"/>
BDM OTHER	Broadleaf Decid...	Broadleaf Deciduous ...	ACPL	<input type="checkbox"/>
BDS OTHER	Broadleaf Decid...	Broadleaf Deciduous ...	MA2	<input type="checkbox"/>

Assigned Species Value
Common Name: Scientific Name: Tree Type:

Sweetgum in (3) climate zones at age 40



Inland Empire



Coastal S. CA



Central Valley

What Equipment do you need to use Streets?

- 🌳 Pentium or compatible 1600Mhz or faster processor
- 🌳 512 MB of RAM
- 🌳 Monitor with resolution at least 800X600
- 🌳 Hard drive with 500 MB free space
- 🌳 Windows XP service pack 2 or higher, including Windows 7
- 🌳 For PDA and external device users: Windows Mobile 5.0 – 6.5 operating system (OS 7 is not currently compatible)

Updates Coming!

Summer 2012



- 🌳 Compatibility for iPhone/iPad/Android
 - Use a wider variety of mobile devices to conduct your inventory electronically
- 🌳 Other updates to i-Tree Software suite

Using a GIS device

- 🌳 Using GPS is optional
- 🌳 Can use GPS-enabled devices that run on Windows Mobile 5.0 – 6.5 or other compatible devices paired with NMEA Bluetooth or serial GPS
- 🌳 Trimble Juno SB, Trimble Nomad, Pharos Traveler 525 and MWg Zinc II have been used (Others are available as well)
- 🌳 Streets may operate slightly differently on different devices

How to Install i-Tree

- 🌳 Go to www.itreetools.org
- 🌳 Create an account
- 🌳 Can download program from site or request a CD
- 🌳 Follow instructions to run the itree_setup.exe file.
- 🌳 Select Streets or any other components you would like to download



i-Tree™

GENERAL INFORMATION ON TREE INVENTORIES

Conducting an Inventory—General Steps



- 🌳 Define inventory
- 🌳 Prepare inventory for external device (or paper)
- 🌳 Conduct inventory in the field
- 🌳 Import data into i-Tree Streets and analyze data
- 🌳 Quality check data from the field

Why conduct a tree inventory?

- 🌳 Justify and leverage funds
- 🌳 Highlight benefits to public & decision makers
- 🌳 Plan, prioritize, and budget
- 🌳 Increase work efficiency
- 🌳 Benchmark progress
- 🌳 Build partnerships



Inventory—first steps

- 🌳 Consider how the inventory will be used
 - For management?
 - For planning?
 - For a specific project
- 🌳 What is the scope of the inventory?
 - Complete, partial, sample
- 🌳 Who will use it?
- 🌳 Who will manage it?
 - Keep it updated
 - How often?

Inventories—Collection Methods

🌳 Electronic

- Standardize data collection
- Quick
- No need to re-enter data
- Fewer mistakes
- Equipment costs may be high

🌳 Paper

- Lower equipment cost
- Easy to accommodate surveyors with low-technology
- Need to enter information manually



What Information to Collect?

Tree information

- Tree ID, Species, DBH, size, location

Site information

- What type of site? Cutout, lawn, etc.
- Land use—residential, commercial, etc.

Global Information System (GIS) information—addresses or GPS

Maintenance

- Needs, tasks

Pest information

How to Collect

Hire professional

- Grants may be available

Trained Volunteers

- State Urban & Community Forestry Program office may assist with training

Tree Stewards

- State Urban & Community Forestry Program office may assist with training



Trained Volunteer Data Collection



City of 60,000
20,000 Trees

3-5% Sample = 600-1,000
trees

4 min / tree = ~50 hrs

4 teams of 3 →
Two 6-hr days + 1 day
training

Typical Resources Needed for Inventory

- 🌳 Transportation
- 🌳 Detailed street segment maps
- 🌳 Project leader (create maps, manage/coordinate volunteers, data upload, quality control)
- 🌳 Expertise:
 - ✓ Minimal
 - ✓ 6-8 hrs training is adequate
 - ✓ Tree ID knowledge desired
- 🌳 Equipment:
 - ✓ DBH tape (tree diameter) or equivalent (e.g., Biltmore stick)
 - ✓ PDAs, Clipboard, GPS, etc.

Using volunteers


- 🌳 Create a field guide for inventory-takers to use in the field
- 🌳 Explain data fields
 - Identify terms with text and pictures
- 🌳 Standardize assessment




GPS or non-GPS Inventory

Location information

- Can use GPS (Global Positioning System)
 - ✓ External bluetooth GPS unit
 - ✓ Internal GPS
- Can use addresses

 You may find that you don't need the specific tree point, but that the address will suffice

 In Streets, you can input GPS information or use addresses only



HOW TO SET UP YOUR INVENTORY ON DESKTOP

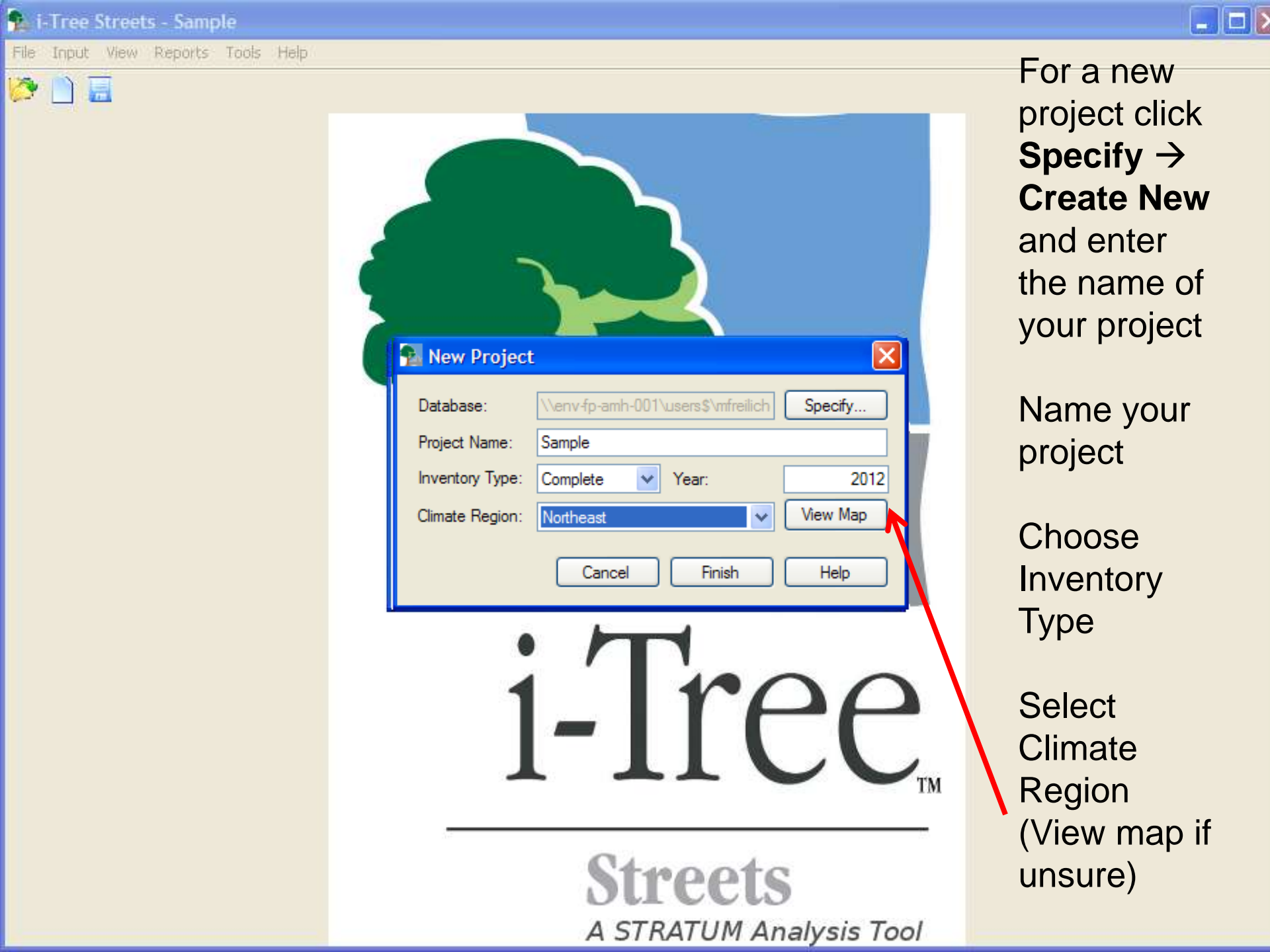
Streets User Manual

- 🌳 Covers the steps for completing your inventory in four phases
- 🌳 Pages 6-21 can help you set up the fields for your inventory
- 🌳 www.itreetools.org → Resources → Manuals and Workbooks → i-Tree Streets
- 🌳 Streets has a pre-loaded sample project **File→Open→Sample Project** that you can work with to familiarize yourself with Streets





Open Streets
and go to **File** →
Open and go to
New Project



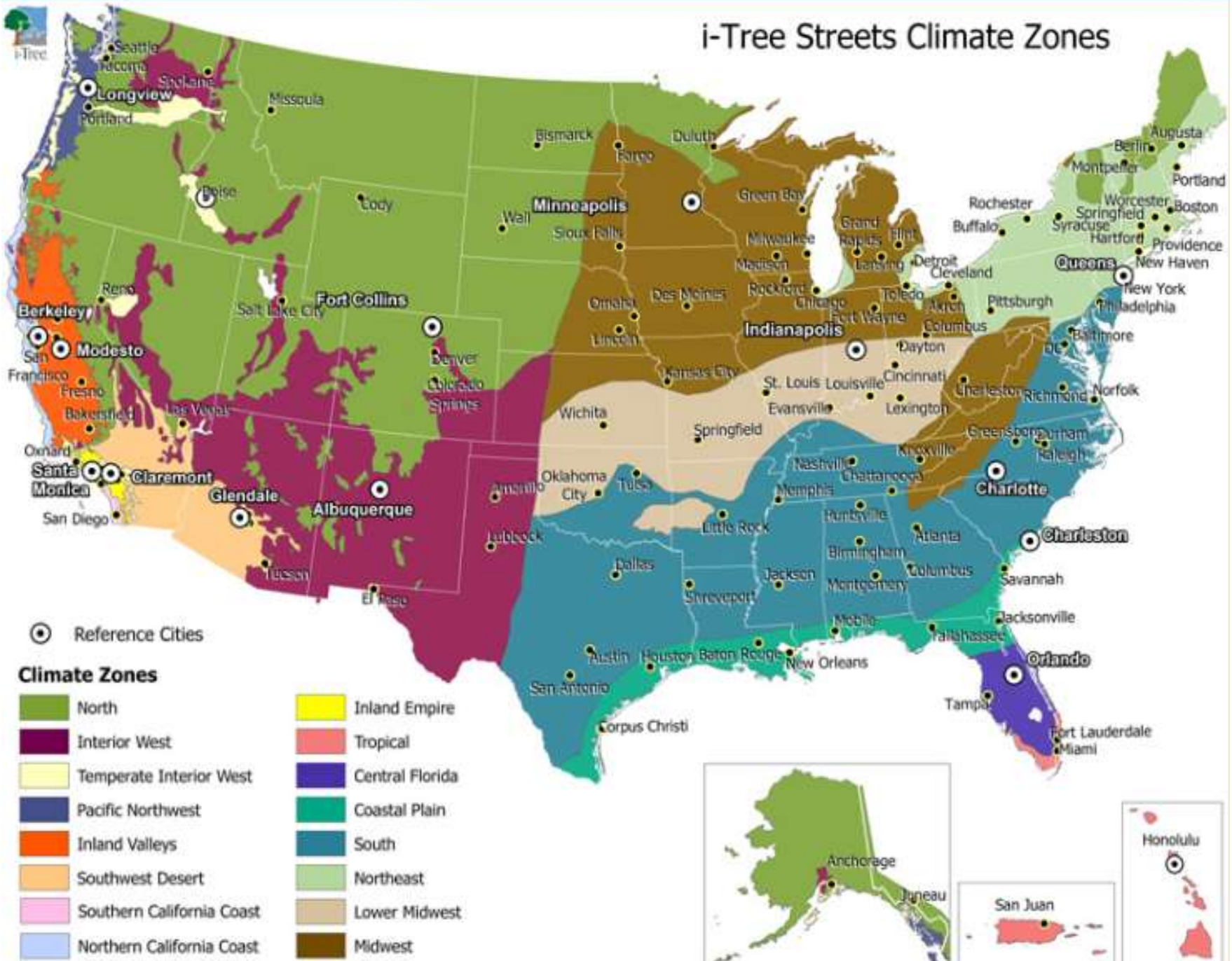
For a new project click **Specify** → **Create New** and enter the name of your project

Name your project

Choose Inventory Type

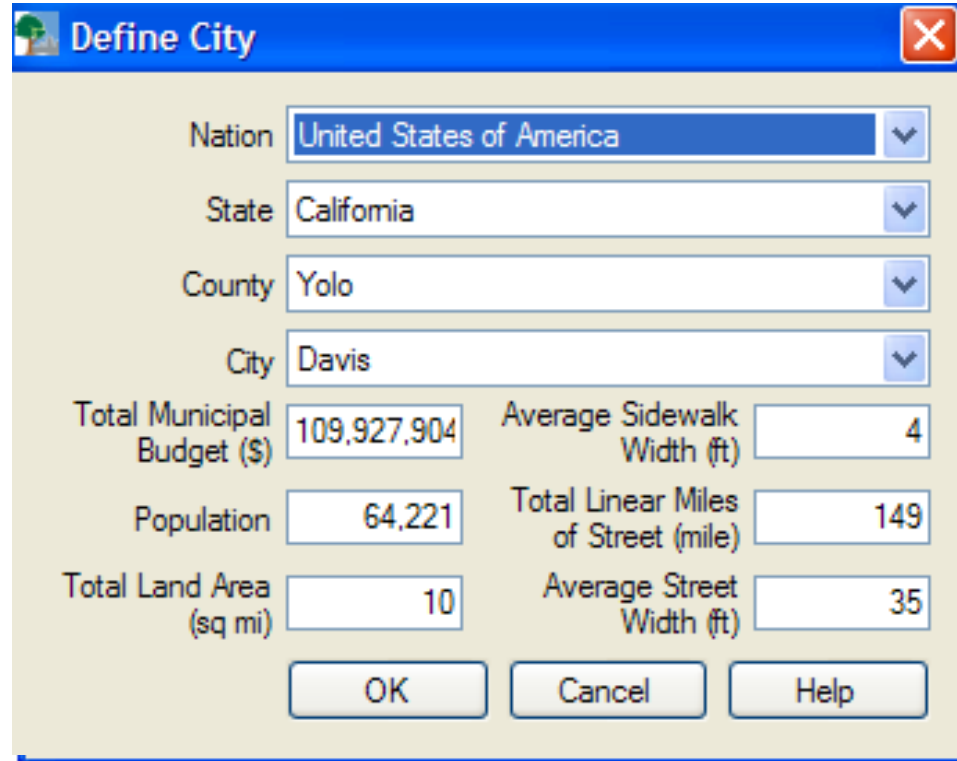
Select Climate Region
(View map if unsure)

The figure consists of four separate maps, each enclosed in a thin black border. The top-left map shows the state of Alaska in green, with the city of Anchorage marked by a black dot and the city of Juneau marked by a red dot. The top-right map shows the Hawaiian Islands in red, with the city of Honolulu marked by a black dot. The bottom-left map shows the island of Puerto Rico in red, with the city of San Juan marked by a black dot. The bottom-right map shows the island of Guam in red, with the city of Agaña marked by a black dot.



Define City

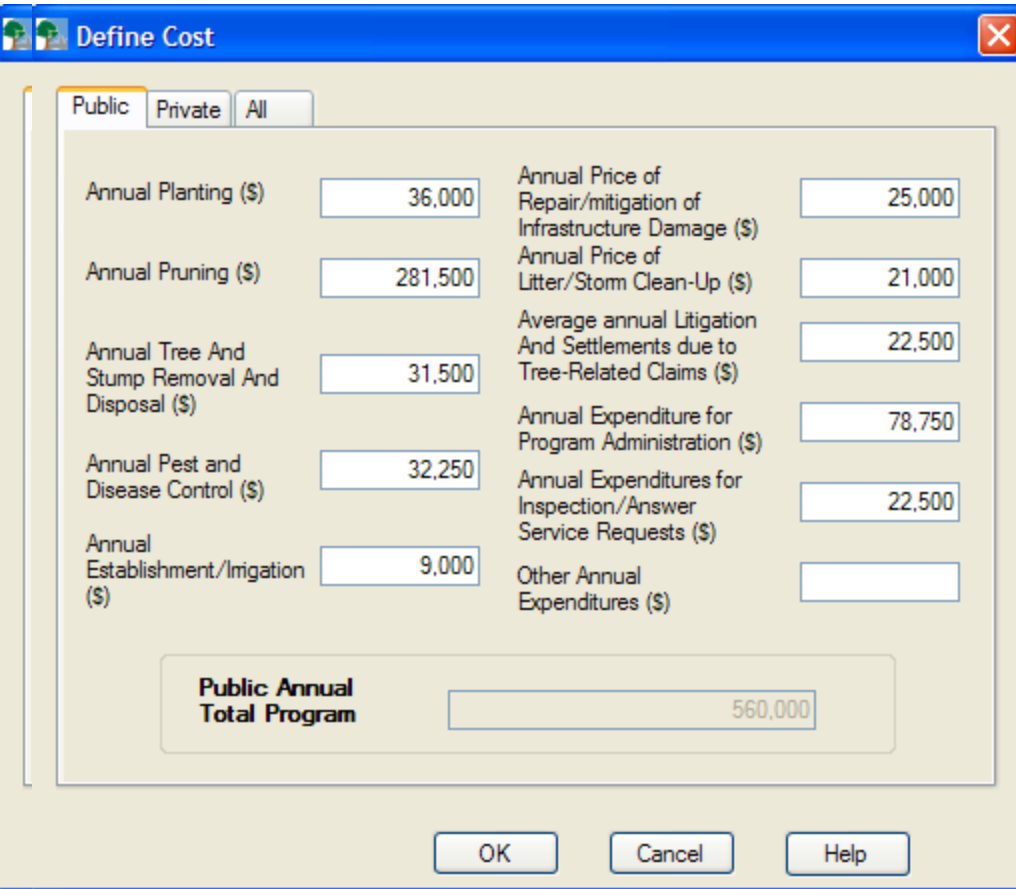
- Must enter Nation, State, County, City
- Can enter other information later
- Simply go back to **Input→City Information**



The screenshot shows a 'Define City' dialog box with a blue title bar and a close button. The form contains several input fields and buttons. The 'Nation' field is a dropdown menu set to 'United States of America'. The 'State' field is a dropdown menu set to 'California'. The 'County' field is a dropdown menu set to 'Yolo'. The 'City' field is a dropdown menu set to 'Davis'. Below these are six text input fields arranged in two columns. The left column contains 'Total Municipal Budget (\$)' with the value '109,927,904', 'Population' with the value '64,221', and 'Total Land Area (sq mi)' with the value '10'. The right column contains 'Average Sidewalk Width (ft)' with the value '4', 'Total Linear Miles of Street (mile)' with the value '149', and 'Average Street Width (ft)' with the value '35'. At the bottom are three buttons: 'OK', 'Cancel', and 'Help'.

Field	Value
Nation	United States of America
State	California
County	Yolo
City	Davis
Total Municipal Budget (\$)	109,927,904
Population	64,221
Total Land Area (sq mi)	10
Average Sidewalk Width (ft)	4
Total Linear Miles of Street (mile)	149
Average Street Width (ft)	35

Define Cost



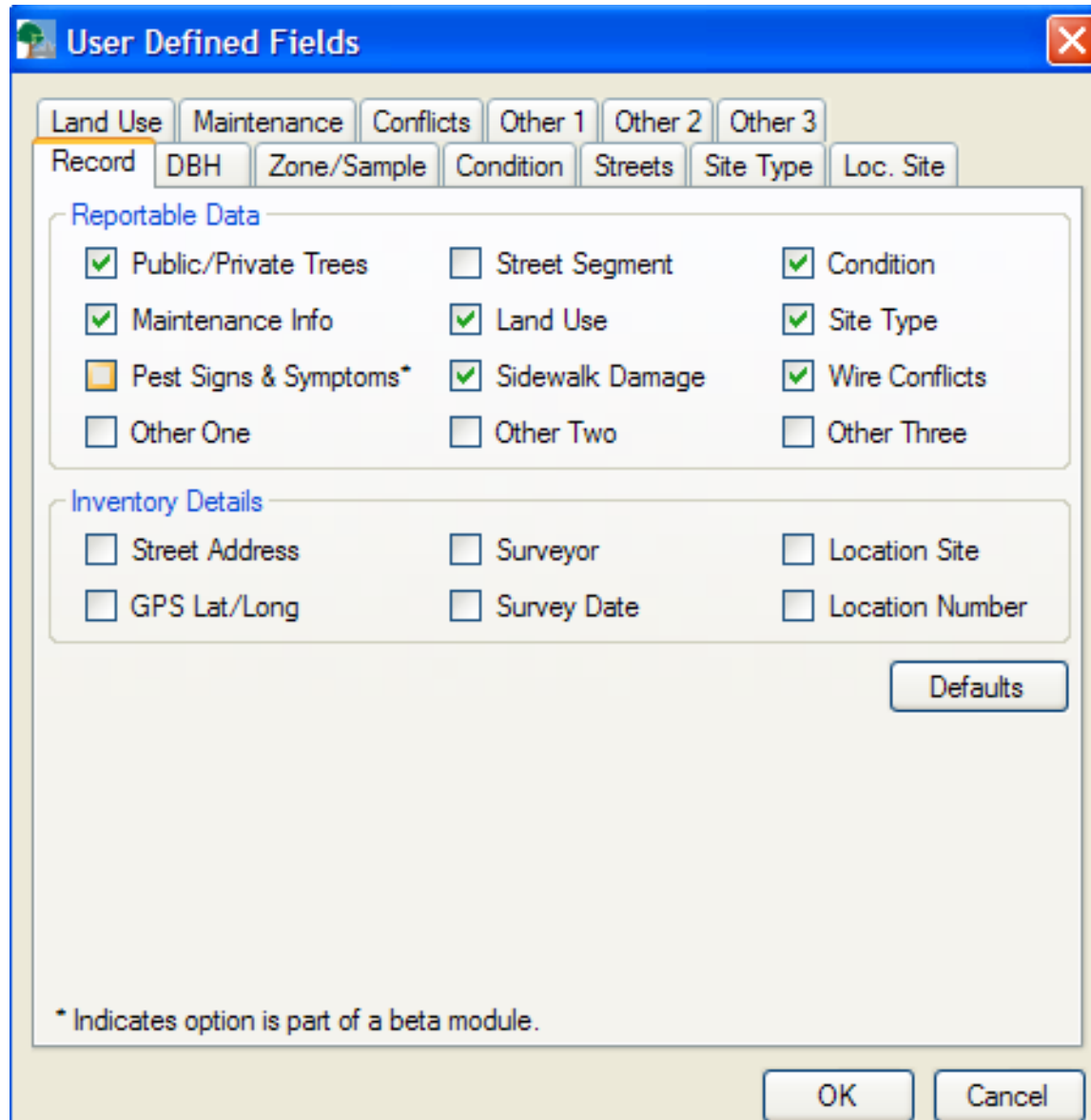
Category	Value
Annual Planting (\$)	36,000
Annual Pruning (\$)	281,500
Annual Tree And Stump Removal And Disposal (\$)	31,500
Annual Pest and Disease Control (\$)	32,250
Annual Establishment/Irrigation (\$)	9,000
Annual Price of Repair/mitigation of Infrastructure Damage (\$)	25,000
Annual Price of Litter/Storm Clean-Up (\$)	21,000
Average annual Litigation And Settlements due to Tree-Related Claims (\$)	22,500
Annual Expenditure for Program Administration (\$)	78,750
Annual Expenditures for Inspection/Answer Service Requests (\$)	22,500
Other Annual Expenditures (\$)	
Public Annual Total Program	560,000

🌳 Can enter this information now or return to it later

🌳 **Input→Annual Costs**

Data Fields

- 🌳 Customize fields for your inventory for your external device
- 🌳 Under **Records**, check boxes for fields you want to include
- 🌳 Some are checked by default



The image shows a software window titled "User Defined Fields" with a blue title bar and a close button (X) in the top right corner. The window contains a tabbed interface with the following tabs: "Land Use", "Maintenance", "Conflicts", "Other 1", "Other 2", "Other 3", "Record", "DBH", "Zone/Sample", "Condition", "Streets", "Site Type", and "Loc. Site". The "Record" tab is currently selected. Below the tabs, there are two main sections: "Reportable Data" and "Inventory Details".

Reportable Data

<input checked="" type="checkbox"/> Public/Private Trees	<input type="checkbox"/> Street Segment	<input checked="" type="checkbox"/> Condition
<input checked="" type="checkbox"/> Maintenance Info	<input checked="" type="checkbox"/> Land Use	<input checked="" type="checkbox"/> Site Type
<input type="checkbox"/> Pest Signs & Symptoms*	<input checked="" type="checkbox"/> Sidewalk Damage	<input checked="" type="checkbox"/> Wire Conflicts
<input type="checkbox"/> Other One	<input type="checkbox"/> Other Two	<input type="checkbox"/> Other Three

Inventory Details

<input type="checkbox"/> Street Address	<input type="checkbox"/> Surveyor	<input type="checkbox"/> Location Site
<input type="checkbox"/> GPS Lat/Long	<input type="checkbox"/> Survey Date	<input type="checkbox"/> Location Number

Defaults

* Indicates option is part of a beta module.

OK Cancel

Inventory Details

- 🌳 Location info: **Street address** or **GPS**
- 🌳 Can require login for **surveyor** and **date**
- 🌳 **Location site**—more specific location information (right, left, front...)
- 🌳 **Location number**—can distinguish between multiple trees at the same address

User Defined Fields

Land Use Maintenance Conflicts Other 1 Other 2 Other 3

Record DBH Zone/Sample Condition Streets Site Type Loc. Site

Reportable Data

☒ Public/Private Trees ☐ Street Segment ☒ Condition

☒ Maintenance Info ☒ Land Use ☒ Site Type

☐ Pest Signs & Symptoms* ☒ Sidewalk Damage ☒ Wire Conflicts

☐ Other One ☐ Other Two ☐ Other Three

Inventory Details

☐ Street Address ☐ Surveyor ☐ Location Site

☐ GPS Lat/Long ☐ Survey Date ☐ Location Number

Defaults

* Indicates option is part of a beta module.

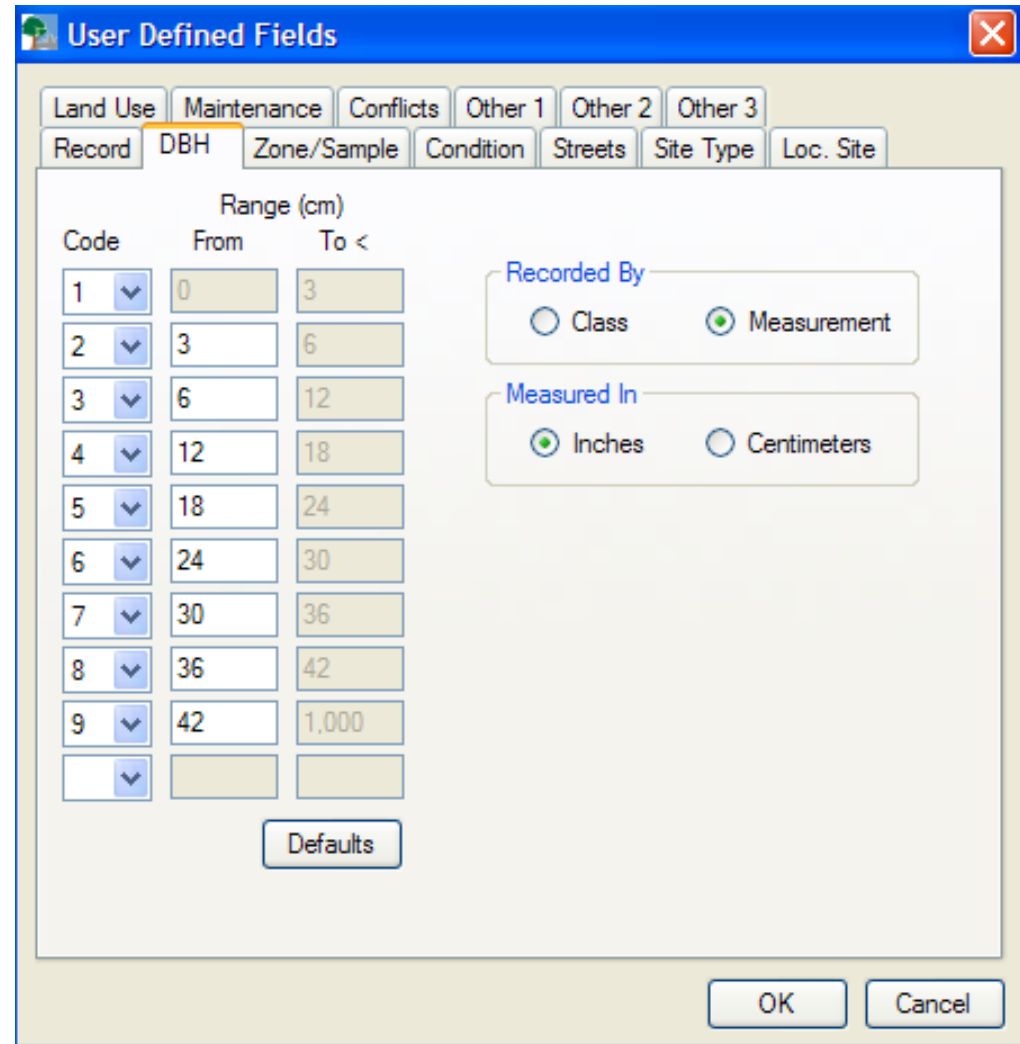
OK Cancel

If you ever want to return to default values after you have made changes, simply hit the **Defaults** button

Reportable Data--DBH

🌳 DBH—record by class or specific measurement

🌳 Inches or centimeters



The image shows a software window titled "User Defined Fields" with a close button (X) in the top right corner. The window has several tabs: "Land Use", "Maintenance", "Conflicts", "Other 1", "Other 2", "Other 3", "Record", "DBH", "Zone/Sample", "Condition", "Streets", "Site Type", and "Loc. Site". The "DBH" tab is currently selected and highlighted in orange. Below the tabs, there is a table for defining DBH ranges. The table has three columns: "Code", "From", and "To <". The "Code" column contains dropdown menus with numbers 1 through 9, and an empty dropdown at the bottom. The "From" and "To <" columns contain text input fields with numerical values. To the right of the table, there are two groups of radio buttons. The first group is labeled "Recorded By" and has two options: "Class" (unselected) and "Measurement" (selected). The second group is labeled "Measured In" and has two options: "Inches" (selected) and "Centimeters" (unselected). At the bottom of the table area, there is a "Defaults" button. At the bottom right of the window, there are "OK" and "Cancel" buttons.

Code	From	To <
1	0	3
2	3	6
3	6	12
4	12	18
5	18	24
6	24	30
7	30	36
8	36	42
9	42	1,000

Recorded By: ☐ Class ☒ Measurement

Measured In: ☒ Inches ☐ Centimeters

Defaults

OK Cancel

Reportable Data—Zone/Sample

- 🌳 If you are doing a complete inventory, this field will look like this
- 🌳 You can enter neighborhoods into the Name field under Zone/Sample
- 🌳 Otherwise, you will enter information for your sample inventory
- 🌳 (We will not cover sample inventories here)

The screenshot shows a software window titled "User Defined Fields". It has several tabs at the top: "Land Use", "Maintenance", "Conflicts", "Other 1", "Other 2", "Other 3", "Record", "DBH", "Zone/Sample", "Condition", "Streets", "Site Type", and "Loc. Site". The "Zone/Sample" tab is currently selected. Below the tabs is a table with the following columns: "Zone", "Name", "Segments Sampled", and "Number of Segments". The first row of the table contains the values "1", "1", "1", and "0". Below the table are two buttons: "New" and "Delete". To the right of these buttons is a label "Total Segments:" followed by a text box containing the number "0". At the bottom right of the window are two buttons: "OK" and "Cancel".

Zone	Name	Segments Sampled	Number of Segments
1	1	1	0

Reportable Data—Condition

User Defined Fields

Land Use Maintenance Conflicts Other 1 Other 2 Other 3
Record DBH Zone/Sample **Condition** Streets Site Type Loc. Site

Code	Description	Woody Cond. Factor(%)	Foliage Cond. Factor(%)
1	Dead or Dying	10	10
2	Poor	35	35
3	Fair	60	60
4	Good	85	85

Defaults

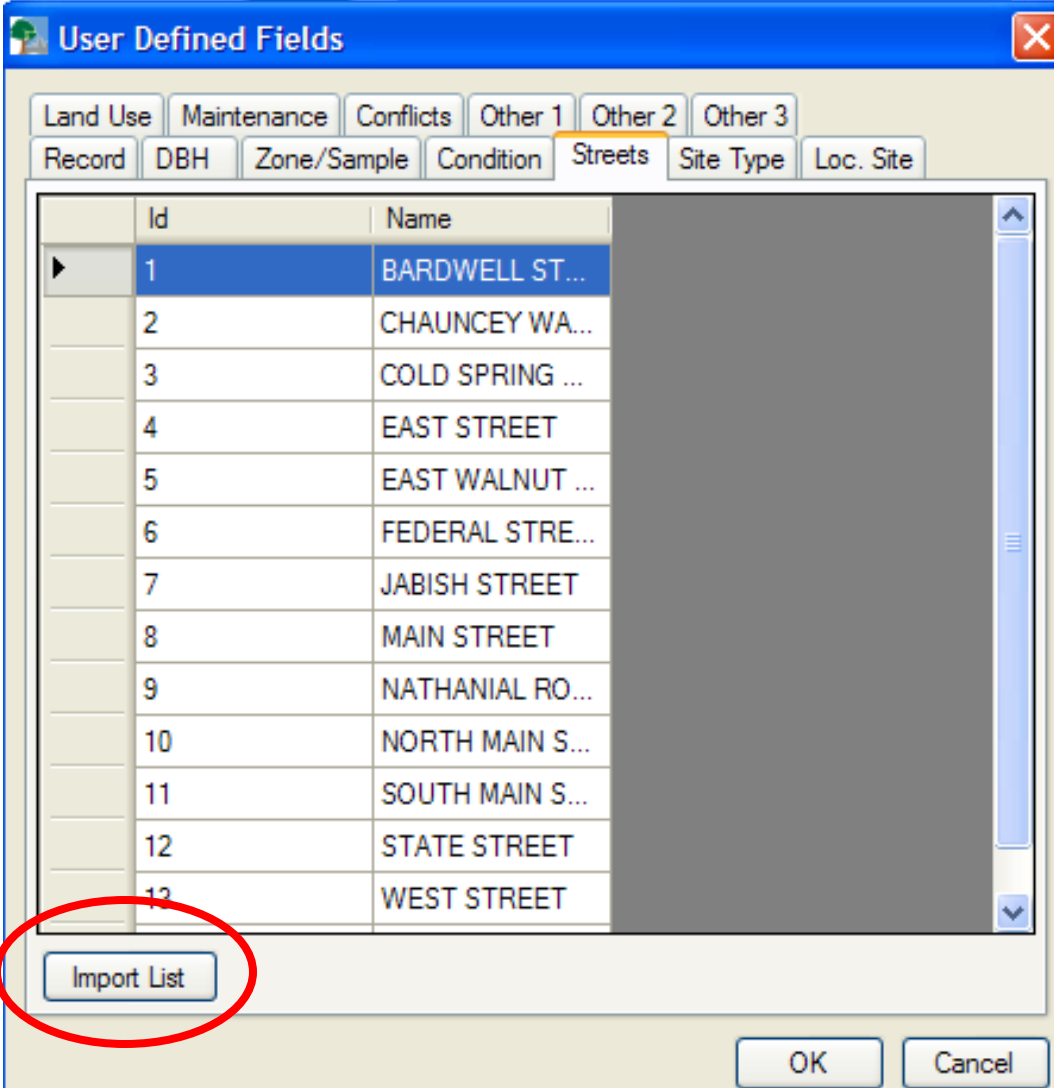
OK Cancel

- Can use the defaults
- Or customize
- The numbers represent the Replacement Factor Percent, a number used in calculating the replacement value of trees

Reportable Data—Streets

🌳 Import list of streets in .txt file from Microsoft Excel

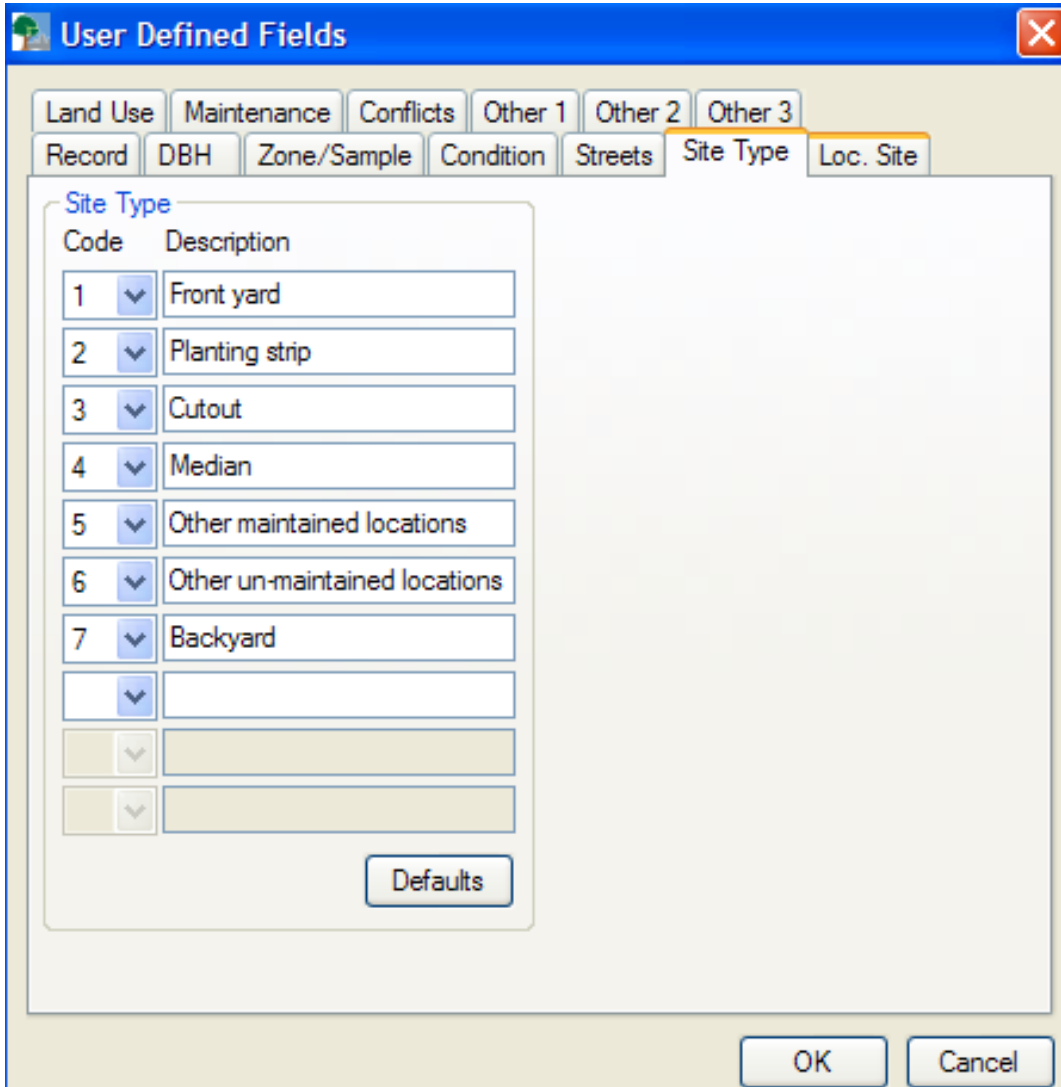
🌳 Be sure to alphabetize your list before you import



The screenshot shows a software window titled "User Defined Fields" with a blue header bar and a close button (X) in the top right corner. Below the header is a row of tabs: "Land Use", "Maintenance", "Conflicts", "Other 1", "Other 2", and "Other 3". Below these is another row of tabs: "Record", "DBH", "Zone/Sample", "Condition", "Streets", "Site Type", and "Loc. Site". The "Streets" tab is currently selected and highlighted in yellow. The main area of the window contains a table with two columns: "Id" and "Name". The table lists 13 streets, with the first row highlighted in blue. To the right of the table is a large grey rectangular area. At the bottom of the window, there is an "Import List" button, which is circled in red, and "OK" and "Cancel" buttons to its right.

Id	Name
1	BARDWELL ST...
2	CHAUNCEY WA...
3	COLD SPRING ...
4	EAST STREET
5	EAST WALNUT ...
6	FEDERAL STRE...
7	JABISH STREET
8	MAIN STREET
9	NATHANIAL RO...
10	NORTH MAIN S...
11	SOUTH MAIN S...
12	STATE STREET
13	WEST STREET

Reportable Data—Site Type



User Defined Fields

Land Use Maintenance Conflicts Other 1 Other 2 Other 3
Record DBH Zone/Sample Condition Streets Site Type Loc. Site

Site Type

Code	Description
1	Front yard
2	Planting strip
3	Cutout
4	Median
5	Other maintained locations
6	Other un-maintained locations
7	Backyard

Defaults

OK Cancel

- 🌳 Default list available
- 🌳 The immediate area where the tree is planted
- 🌳 Modify to include other areas...raised planter, lawn, etc.

Reportable Data—Loc. Site

🌳 Specific location descriptors

🌳 Optional

The screenshot shows a software window titled "User Defined Fields" with a blue header bar and a red close button. Below the header is a tabbed interface with tabs for "Land Use", "Maintenance", "Conflicts", "Other 1", "Other 2", "Other 3", "Record", "DBH", "Zone/Sample", "Condition", "Streets", "Site Type", and "Loc. Site". The "Loc. Site" tab is selected and highlighted. Inside this tab, there is a section titled "Location Site" with a table. The table has two columns: "Code" and "Description". The first four rows are pre-filled with codes 1, 2, 3, and 4, and descriptions "Front", "Side-Right", "Side-Left", and "Rear" respectively. Each row has a small blue dropdown arrow next to the code. Below these are five more rows with empty codes and descriptions, each with a small grey dropdown arrow. At the bottom right of the table area is a "Defaults" button. At the bottom right of the entire dialog box are "OK" and "Cancel" buttons.

Code	Description
1	Front
2	Side-Right
3	Side-Left
4	Rear

Reportable Data—Land Use

User Defined Fields

Record DBH Zone/Sample Condition Streets Site Type Loc. Site

Land Use Maintenance Conflicts Other 1 Other 2 Other 3

Land Use

Code	Description
1	Single family residential
2	Multi-family residential
3	Small commercial
4	Industrial/Large commercial
5	Park/vacant/other

Defaults

OK Cancel

- 🌳 Defaults available
- 🌳 Customize to meet your needs
- 🌳 Modify existing fields and add new ones—"town common," "park," "downtown"

Reportable Data--Maintenance

- 🌳 Recommended maintenance
 - General
- 🌳 Priority Tasks
 - Specific tasks
- 🌳 Use Defaults or modify

User Defined Fields

Record DBH Zone/Sample Condition Streets Site Type Loc. Site
Land Use Maintenance Conflicts Other 1 Other 2 Other 3

Recommended Maintenance

Code	Description
1	None
2	Small tree (routine)
3	Small tree (immediate)
4	Large tree (routine)
5	Large tree (immediate)
6	Critical concern (public safety)

Defaults

Priority Task

Code	Description
1	None
2	Stake/Train
3	Crown cleaning
4	Crown Raising
5	Crown reduction/thinning
6	Remove
7	Treat pest/disease

Defaults

OK Cancel

Reportable Data—Conflicts

User Defined Fields

Record DBH Zone/Sample Condition Streets Site Type Loc. Site
Land Use Maintenance Conflicts Other 1 Other 2 Other 3

Sidewalk Heave

Code	Description
1	0 - 3/4 inches
2	3/4 - 1 1/2 inches
3	>1 1/2 inches

Defaults

Wire Conflict

Code	Description
1	No lines
2	Present and no potential confli
3	Present and conflicting

Defaults

OK Cancel

- Default values
- Sidewalk Heave
- Wire Conflicts
- Can modify as needed

Reportable Data—Other1, 2, 3

- 🌳 There are 3 additional categories that are completely open and customizable.
- 🌳 If you clicked Other One, Two, or Three on the main record screen, you will be able to enter the additional Fields
- 🌳 For example, if you wanted to collect whether a tree was a street or park tree for your inventory, you could do that in the **Other** field

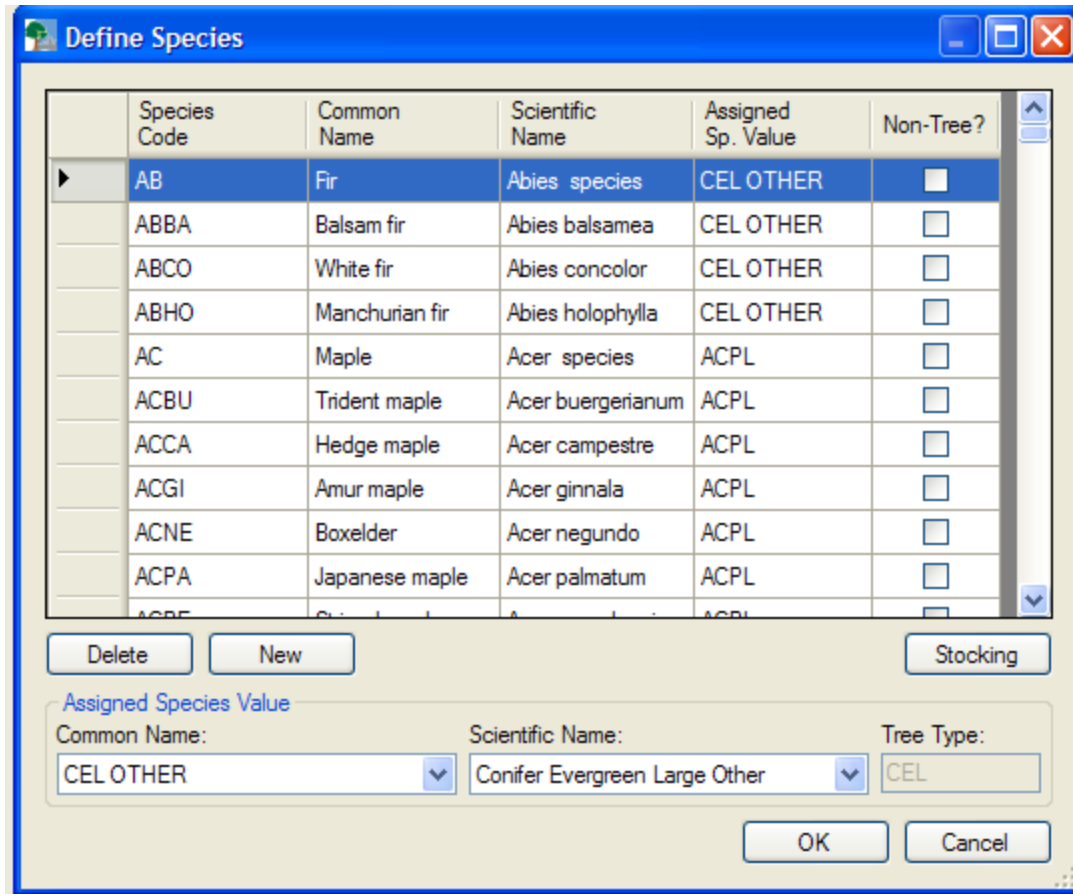
Reportable Data—Other One

- Sample **Other** field with Street or Park tree option
- Include additional maintenance or other information

[illegible]

Species Information

- Go to **Input** → **Species** and you can customize species
- i-Tree will have species by default that were selected for the climate region
- Include other species not on the list or include **non-tree** items for stocking



The 'Define Species' dialog box is a software window for managing species data. It features a table with columns for Species Code, Common Name, Scientific Name, Assigned Sp. Value, and Non-Tree?. The table lists various species, including Abies species, Balsam fir, White fir, Manchurian fir, Maple, Trident maple, Hedge maple, Amur maple, Boxelder, and Japanese maple. Below the table are buttons for 'Delete', 'New', and 'Stocking'. At the bottom, there are input fields for 'Assigned Species Value', 'Common Name', 'Scientific Name', and 'Tree Type', along with 'OK' and 'Cancel' buttons.

	Species Code	Common Name	Scientific Name	Assigned Sp. Value	Non-Tree?
▶	AB	Fir	Abies species	CEL OTHER	<input type="checkbox"/>
	ABBA	Balsam fir	Abies balsamea	CEL OTHER	<input type="checkbox"/>
	ABCO	White fir	Abies concolor	CEL OTHER	<input type="checkbox"/>
	ABHO	Manchurian fir	Abies holophylla	CEL OTHER	<input type="checkbox"/>
	AC	Maple	Acer species	ACPL	<input type="checkbox"/>
	ACBU	Trident maple	Acer buergerianum	ACPL	<input type="checkbox"/>
	ACCA	Hedge maple	Acer campestre	ACPL	<input type="checkbox"/>
	ACGI	Amur maple	Acer ginnala	ACPL	<input type="checkbox"/>
	ACNE	Boxelder	Acer negundo	ACPL	<input type="checkbox"/>
	ACPA	Japanese maple	Acer palmatum	ACPL	<input type="checkbox"/>
	ACPE	European larch	Larix laricina	ACPL	<input type="checkbox"/>

Buttons: Delete, New, Stocking

Assigned Species Value: CEL OTHER

Common Name: Conifer Evergreen Large Other

Scientific Name: Conifer Evergreen Large Other

Tree Type: CEL

Buttons: OK, Cancel

Species—Non-Tree items

- Click **New** to add the non-tree
- Type the code, STUMP, in this case
- Then check the **Non-Tree box** and click **Stocking**
- Select the code, describe it and include an appropriate new tree size if applicable

The screenshot shows the 'Define Species' window with a table of species codes. A 'Stocking Codes' dialog box is open, allowing the user to define a new stocking code. The dialog box has three columns: 'Code', 'Description', and 'Tree Size'. The 'Code' column has a dropdown menu with 'STUMP' selected. The 'Description' column has a text field with 'Stump'. The 'Tree Size' column has a dropdown menu with 'Large' selected. The 'Tree Size' dropdown menu is open, showing options: 'Small', 'Medium', 'Large', and 'Undefined'. The 'Undefined' option is highlighted. The 'Stocking Codes' dialog box also has 'OK' and 'Cancel' buttons. In the background, the 'Define Species' window shows a table with columns: Species Code, Common, Scientific, Assigned, and Non-Tree?. The 'Non-Tree?' column has a checkbox for each species code. The 'STUMP' species code has its 'Non-Tree?' checkbox checked. There are 'Delete', 'Stocking', 'OK', and 'Cancel' buttons in the 'Define Species' window.

Species Code	Common	Scientific	Assigned	Non-Tree?
SESE				<input type="checkbox"/>
SOAM				<input type="checkbox"/>
SOAU				<input type="checkbox"/>
SOJA				<input type="checkbox"/>
STJA				<input type="checkbox"/>
STUMP				<input checked="" type="checkbox"/>
SYRE				<input type="checkbox"/>
TA				<input type="checkbox"/>
TADI				<input type="checkbox"/>
THOC				<input type="checkbox"/>

Species—Non-Trees

Define Species

Species Code	Common	Scientific	Assigned	Non-Tree?
ULPA				<input type="checkbox"/>
ULPA99				<input type="checkbox"/>
ULPR				<input type="checkbox"/>
ULPU				<input type="checkbox"/>
ULRU				<input type="checkbox"/>
ULS				<input type="checkbox"/>
ULSE				<input type="checkbox"/>
ULTH				<input type="checkbox"/>
ZE				<input type="checkbox"/>
ZESE				<input checked="" type="checkbox"/>

Delete

Assigned Species
Common Name:

Stocking Codes

Code	Description	Tree Size
STUMP	Stump	Large
PLSPL	Plantable Space Large	Large
PLSPS	Plantable Space Small	Small

OK Cancel

Stocking

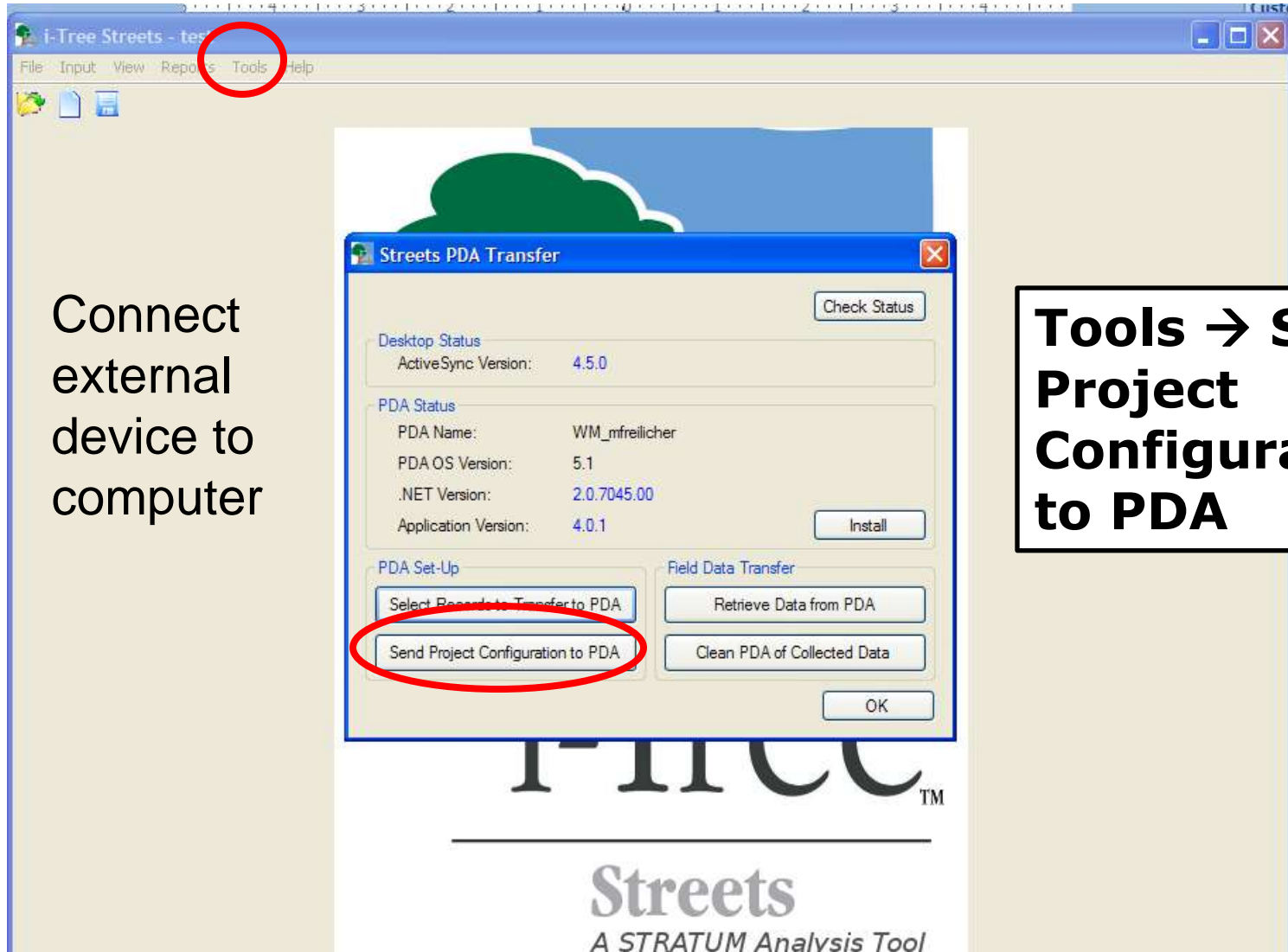
Tree Type:

OK Cancel

Export project to external device

Connect
external
device to
computer

**Tools → Send
Project
Configuration
to PDA**





**USING I-TREE STREETS
WITH A PDA OR
EXTERNAL DEVICE**

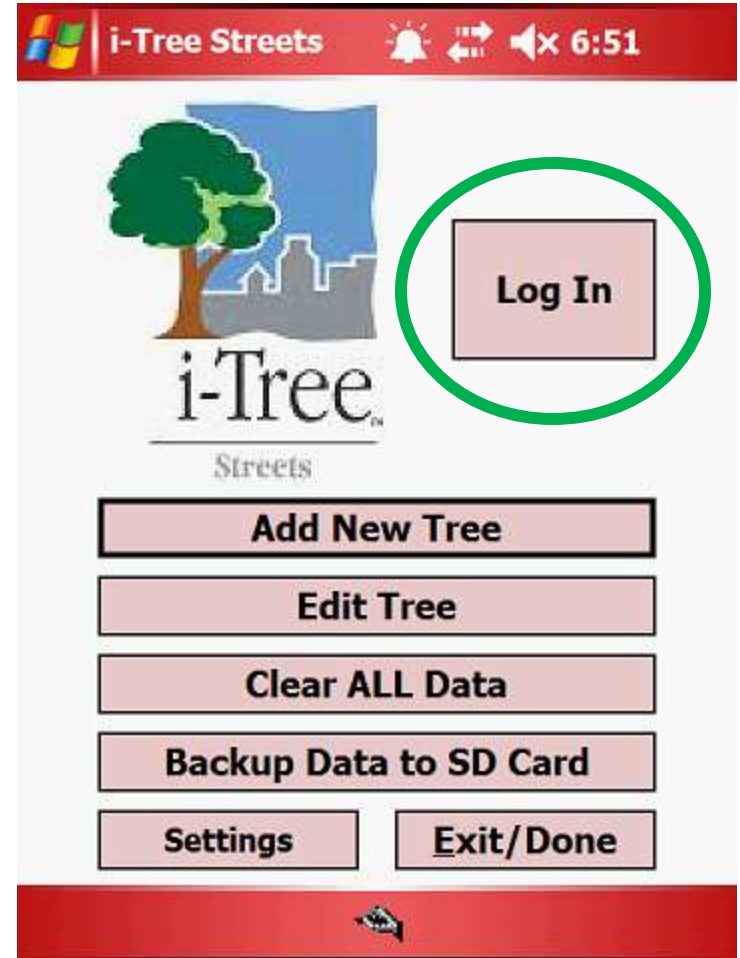
Once you've configured your project

- 🌳 You are now ready to go out in the field with your device
- 🌳 Now what!?
- 🌳 Make sure your batteries are charged, you have plenty of food and water, maps, field guide, tree ID books, whatever you need and head out



Working with your external device



- 🌳 Main screen
- 🌳 If you selected a requirement to log in, log in at this time



Log In



i-Tree Streets PC



6:52



Survey Date
3/23/12

- +

Today

Surveyor/Team ID:

Cancel Continue

- Enter name or Team ID
- Can adjust the date if necessary

Tree Information

🌳 Tabs at bottom to navigate through tree information

🌳 Location

🌳 GPS

🌳 Species

🌳 Management

🌳 Pest

The screenshot shows a mobile application interface with a red header bar. The header contains a Windows logo, the title "Location", a bell icon, a double arrow icon, a speaker icon, and the time "6:53". Below the header, there are several input fields and a checkbox. The fields are labeled "Tree ID", "Zone", "Street Segment", "Street Name", "Street Number", "Location Number", "Location Site", "Land Use", and "Site Type". The "Tree ID" field contains the number "2". The "Zone" field is a dropdown menu showing "1". The "Street Segment", "Street Name", "Street Number", and "Location Number" fields are empty. The "Location Site" field is a dropdown menu showing "Not Required". The "Land Use" and "Site Type" fields are dropdown menus showing "Not Entered". The "City Managed" checkbox is checked. Below these fields, there is a "Hold Location" checkbox and a "Clear Location" button. At the bottom of the screen, there is a red bar with five tabs: "Location", "GPS", "Species", "Mgt", and "Pest". The "Location" tab is selected. Below the tabs, there is a red bar with "Cancel" and "Save" buttons, and a small icon of a tree.

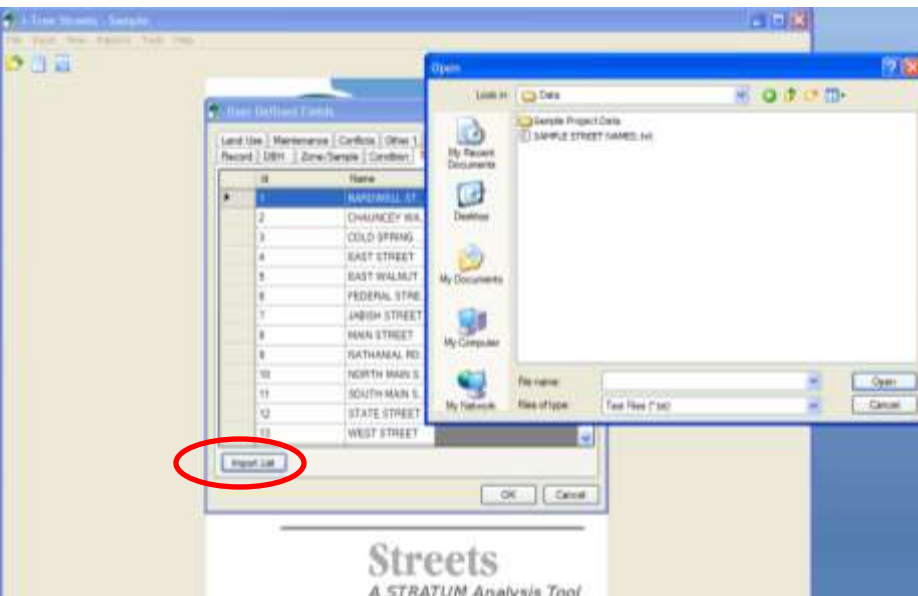
Tree ID	2	Zone	1
Street Segment			
Street Name			
Street Number			
Location Number			
Location Site		Not Required	
Land Use		Not Entered	
Site Type		Not Entered	
City Managed	<input checked="" type="checkbox"/>		
Hold Location	<input type="checkbox"/>	Clear Location	

Location GPS Species Mgt Pest

Cancel Save

Select Street

- 🌳 Import street list into desktop for a drop-down street list (.txt file)



Location [Notification Icon] [Refresh Icon] [Speaker Icon] 6:53

Tree ID Zone

Street Segment

Street Name

Street Number

Location Number

Location Site

Land Use

Site Type


City Managed ☒

☐ Hold Location

Location Species Pest

Location and Site Information

- 🌳 Automatically assigns Tree ID
- 🌳 Enter street address
- 🌳 Land Use
- 🌳 Site Type
- 🌳 City Managed
 - Public or private tree



The screenshot shows a software interface titled "Location" with a Windows logo and a system clock showing 6:53. The form contains the following fields and controls:

- Tree ID:** A text input field containing the number "2".
- Zone:** A dropdown menu showing "1".
- Street Segment:** An empty text input field.
- Street Name:** A dropdown menu showing "EAST STREET".
- Street Number:** A text input field containing "22".
- Location Number:** An empty text input field.
- Location Site:** A dropdown menu showing "Not Required".
- Land Use:** A dropdown menu showing "Small commercial".
- Site Type:** A dropdown menu showing "Cutout" (highlighted in red).
- City Managed:** A checkbox that is checked.
- Hold Location:** An unchecked checkbox.
- Clear Location:** A button.





At the bottom, there is a navigation bar with the following elements:

- Location:** A tab or label.
- GPS:** A tab or label.
- Species:** A tab or label.
- Mgt:** A tab or label.
- Pest:** A tab or label.
- Cancel:** A button.
- Save:** A button.

GPS

🌳 Connect to your external GPS and capture the coordinates

🌳 Enter the coordinates manually

 **GPS**    1:15

Start

Capture

Cancel

Timestamp

Latitude

Longitude

Fix Quality

Sats Being Tracked

Horiz. Dilution

Altitude

Direct Entry

Location


GPS

Species

Mgt





Pest

Cancel



Save

GPS—Direct Entry

 **GPS Direct Entry**    **1:17** **ok**



Please enter coordinates in Decimal Degrees

Latitude





Longitude

Cancel **OK**

123	1	2	3	4	5	6	7	8	9	0	-	=	←
Tab	q	w	e	r	t	y	u	i	o	p	[]	
CAP	a	s	d	f	g	h	j	k	l	;	'		
Shift	z	x	c	v	b	n	m	,	.	/		↵	
Ctl	áü	`	\							↓	↑	←	→

Species Information

 Species    6:54

Species
(Select or Enter Code)

Common Name

DBH (in)

Condition of:

Wood:

Leaves:

Note/Comment

☐ Note this tree

Location


GPS

Species

Mgt





Pest

Cancel



Save

Species Information

 Species    6:54

Species
(Select or
Enter Code)

Sugar maple ▼

Common Name

DBH (in)

23

Condition of:

Wood:

Fair ▼

Leaves:

Fair ▼

Note/Comments

Not Entered

Dead or Dying

Poor

Fair

Good

☐ Note this

Location


GPS

Species

Mgt

Pest

Cancel



Save

Species Information

- 🌳 Include any notes or comments on the tree
- 🌳 Check "Note this Tree" to flag tree for further inquiry
- 🌳 Click "Common Name" button to switch between common and scientific names

The screenshot shows a mobile application interface for recording tree species information. At the top is a red header bar with the Windows logo, the title "Species", and icons for notifications, a share button, and a volume indicator set to 6:54. Below the header, the form is organized into several sections. The first section is labeled "Species (Select or Enter Code)" and contains a dropdown menu with "Sugar maple" selected. Below this is a button labeled "Common Name". The next section is labeled "DBH (in)" and contains a text input field with the value "23". Following this is a section labeled "Condition of:" which includes two dropdown menus: "Wood:" with "Fair" selected, and "Leaves:" with "Fair" selected. Below these is a section labeled "Note/Comment" with a large text input field. At the bottom of the form is a checkbox labeled "Note this tree". The interface concludes with a red footer bar containing a tabbed menu with "Location", "GPS", "Species", "Mgt", and "Pest" tabs, and two large buttons: "Cancel" and "Save".

Species (Select or Enter Code) Sugar maple ▼

Common Name

DBH (in) 23

Condition of:

Wood: Fair ▼

Leaves: Fair ▼

Note/Comment

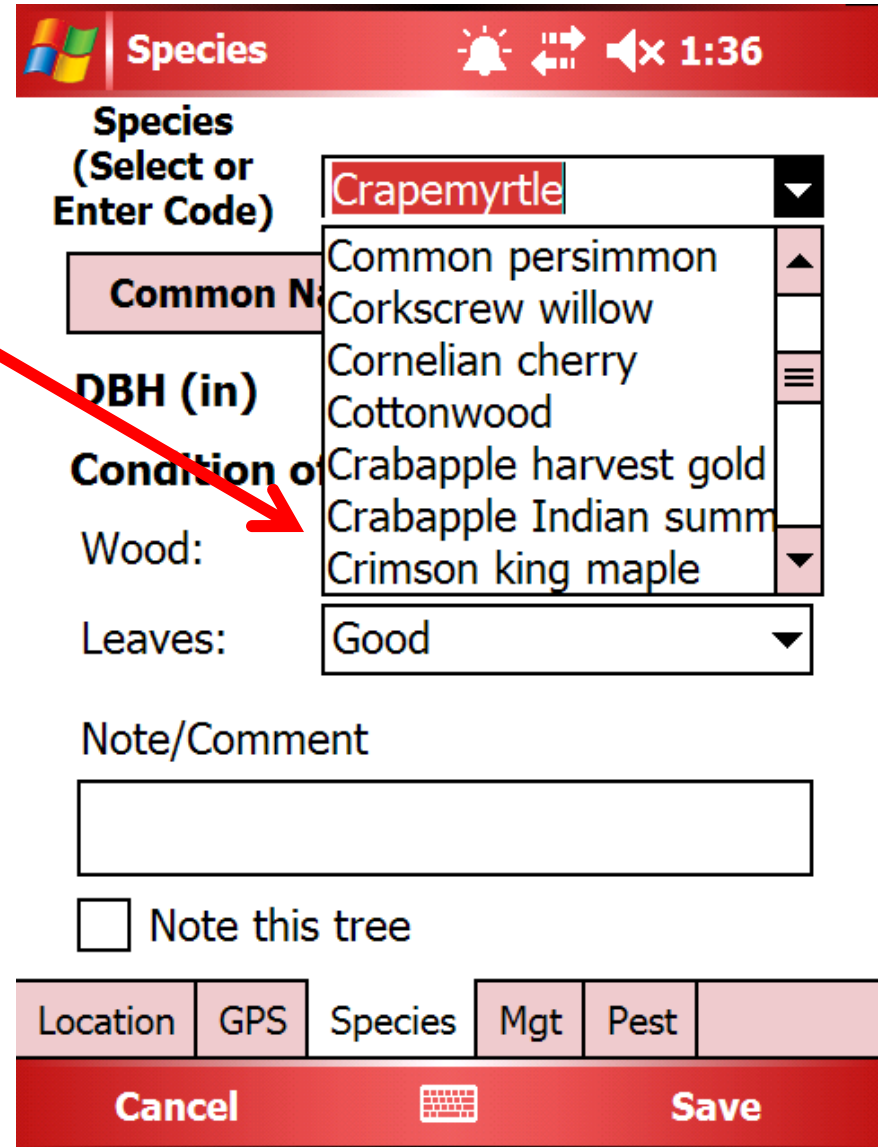
☐ Note this tree

Location GPS Species Mgt Pest

Cancel **Save**

Species Information

- Species not in drop-down menu
- Type species name
- You will work with this in the desktop program



The screenshot shows a desktop application window titled "Species". The window has a red header bar with a Windows logo, the title "Species", and icons for notifications, window management, and volume. The main form contains the following fields:





- Species (Select or Enter Code):** A text input field containing "Crapemyrtle". A red arrow points from the text "Species not in drop-down menu" to this field.
- Common Name:** A text input field.
- DBH (in):** A text input field.
- Condition of Wood:** A text input field.
- Leaves:** A dropdown menu with "Good" selected.
- Note/Comment:** A large text area.
- ☐ Note this tree

At the bottom of the window is a red bar with "Cancel" and "Save" buttons, and a small icon in the center.

Species Information—Non-Tree items

🌳 When configuring the project at your computer, you can enter non-tree items, such as “stump” or “plantable space”

🌳 Hit Save when complete or continue to Mgt tab to enter removal information

 Species    1:37

Species
(Select or Enter Code)

DBH (in)

Condition of:


Wood:

Leaves:





Note/Comment

☐ Note this tree

Location	GPS	Species	Mgt	Pest	
----------	-----	---------	-----	------	--

Cancel  Save

Mgt—Management Information

 Mgt    x 6:55

Maintenance Recommendation
Not Entered ▼

Priority Task
Not Entered ▼

Sidewalk Damage
Not Entered ▼

Wire Conflict
Not Entered ▼

Street or Park Tree
Not Entered ▼

Other2
Not Required ▼

Other3
Not Required ▼

Location


GPS

Species

Mgt





Pest

Cancel



Save



 Mgt    x 6:55

Maintenance Recommendation
Not Entered ▼
Not Entered
None
Small tree (routine)
Small tree (immediate)
Large tree (routine)
Large tree (immediate)
Critical concern (public safety)
Not Entered ▼

Street or Park Tree
Not Entered ▼

Other2
Not Required ▼

Other3
Not Required ▼

Location


GPS

Species

Mgt






Pest

Cancel







Save

Mgt—Priority Task

 Mgt    1:21					
Maintenance Recommendation					
<div>Not Entered ▼</div>					
Priority Task					
<div>Not Entered ▼</div>					
<div>Not Entered</div>					
<div>None</div>					
<div>Stake/Train</div>					
<div>Crown cleaning</div>					
<div>Crown Raising</div>					
<div>Crown reduction/thinning</div>					
<div>Remove</div>					
<div>Treat pest/disease</div>					
Other2					
<div>Not Required ▼</div>					
Other3					
<div>Not Required ▼</div>					
Location	GPS	Species	Mgt	Pest	
Cancel				Save	

Mgt—Sidewalk Damage

 Mgt    1:21

Maintenance Recommendation

Not Entered ▼

Priority Task

Not Entered ▼

Sidewalk Damage

Not Entered ▼

Not Entered

0 - 3/4 inches

3/4 - 1 1/2 inches

>1 1/2 inches

Not Required ▼

Other2


Not Required ▼

Other3

Not Required ▼






Location	GPS	Species	Mgt	Pest	
----------	-----	---------	-----	------	--

Cancel



Save

Mgt—Wire Conflict

 Mgt    1:21					
Maintenance Recommendation					
Not Entered ▼					
Priority Task					
Not Entered ▼					
Sidewalk Damage					
0 - 3/4 inches ▼					
Wire Conflict					
Not Entered ▼					
Not Entered					
No lines					
Present and no potential conflict					
Present and conflicting					
Not Required ▼					
Other3					
Not Required ▼					
Location	GPS	Species	Mgt	Pest	
Cancel				Save	

Mgt—Management Information

- 🌳 Other1, Other2, Other3
- 🌳 For inventory purposes, you can include Street or Park tree, but for i-Tree Streets Analysis, park trees must be excluded (Streets analysis for street trees only)
- 🌳 Here we used the Other1 Category to designate street or park trees





The screenshot shows the 'Mgt' (Management) form in the i-Tree Streets Analysis software. The form is titled 'Mgt' and has a red header bar with a Windows logo, a bell icon, a refresh icon, and a speaker icon with the time '6:55'. The form contains several dropdown menus for selecting maintenance recommendations and tree categories. The 'Street or Park Tree' dropdown is highlighted in red, and the 'Street' option is selected. The 'Other2' and 'Other3' dropdowns are also set to 'Not Required'. At the bottom of the form, there are tabs for 'Location', 'GPS', 'Species', 'Mgt', and 'Pest'. The 'Mgt' tab is currently active. Below the tabs, there are 'Cancel' and 'Save' buttons, with a small icon of a tree between them.

Maintenance Recommendation	Priority Task	Sidewalk Damage	Wire Conflict	Street or Park Tree	Other2	Other3
Large tree (routine)	Crown cleaning	No conflict	No lines	Street	Not Required	Not Required

Location GPS Species Mgt Pest

Cancel Save

Pest

 **Pest - Main**    6:59


Pest Detection

Tree Stress
☒ Yes ☐ No Edit

Foliage / Twigs
☒ Yes ☐ No Edit

Branches / Bole
☐ Yes ☒ No

Primary Pest
Sci. Name - Unknown -
Cmn. Name - Unknown -

Location	GPS	Species	Mgt	Pest
<div>Cancel  Save</div>				

Pest
Information
Coming Up!

IPED Field Guide

Pest Evaluation and Detection



United States
Department of Agriculture
Forest Service
Northeastern Area
State and Private Forestry
Newtown Square, PA 19073
NA-TP-02-10
May 2010
www.na.fs.fed.us



WORKING WITH IPED INVENTORY PEST EVALUATION AND DETECTION

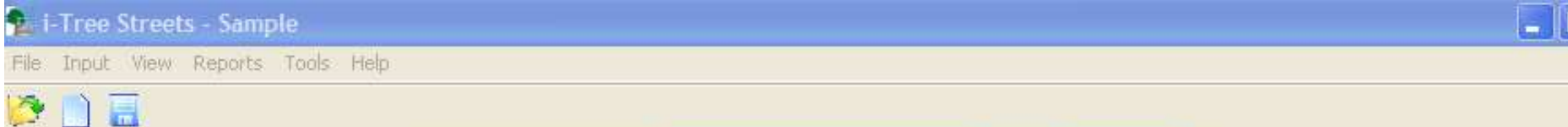


**WORKING WITH YOUR
INVENTORY ON YOUR
DESKTOP**

Manual Data Entry

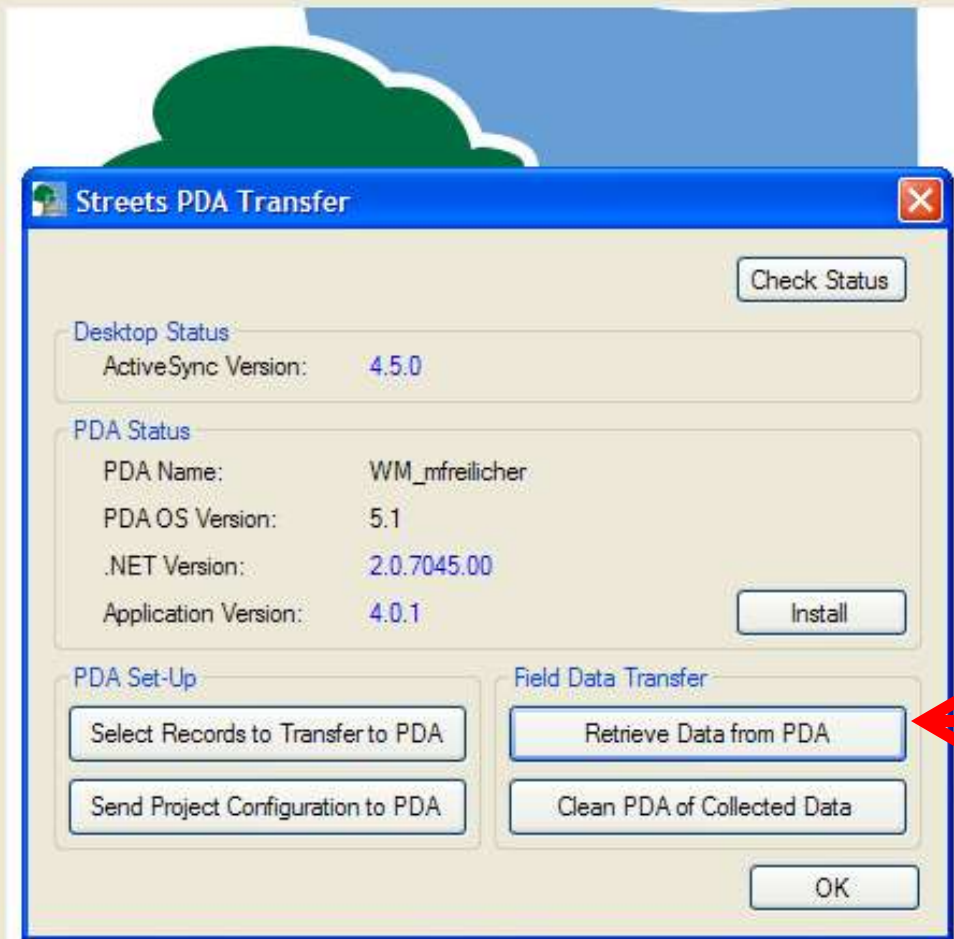
- 🌳 Inputs → Records
 - Manually enter inventory information directly into i-Tree Streets
- 🌳 Import inventory as Microsoft Access Database
 - See the i-Tree Streets User's Manual for information on importing





Open i-Tree Streets and connect external device to computer.

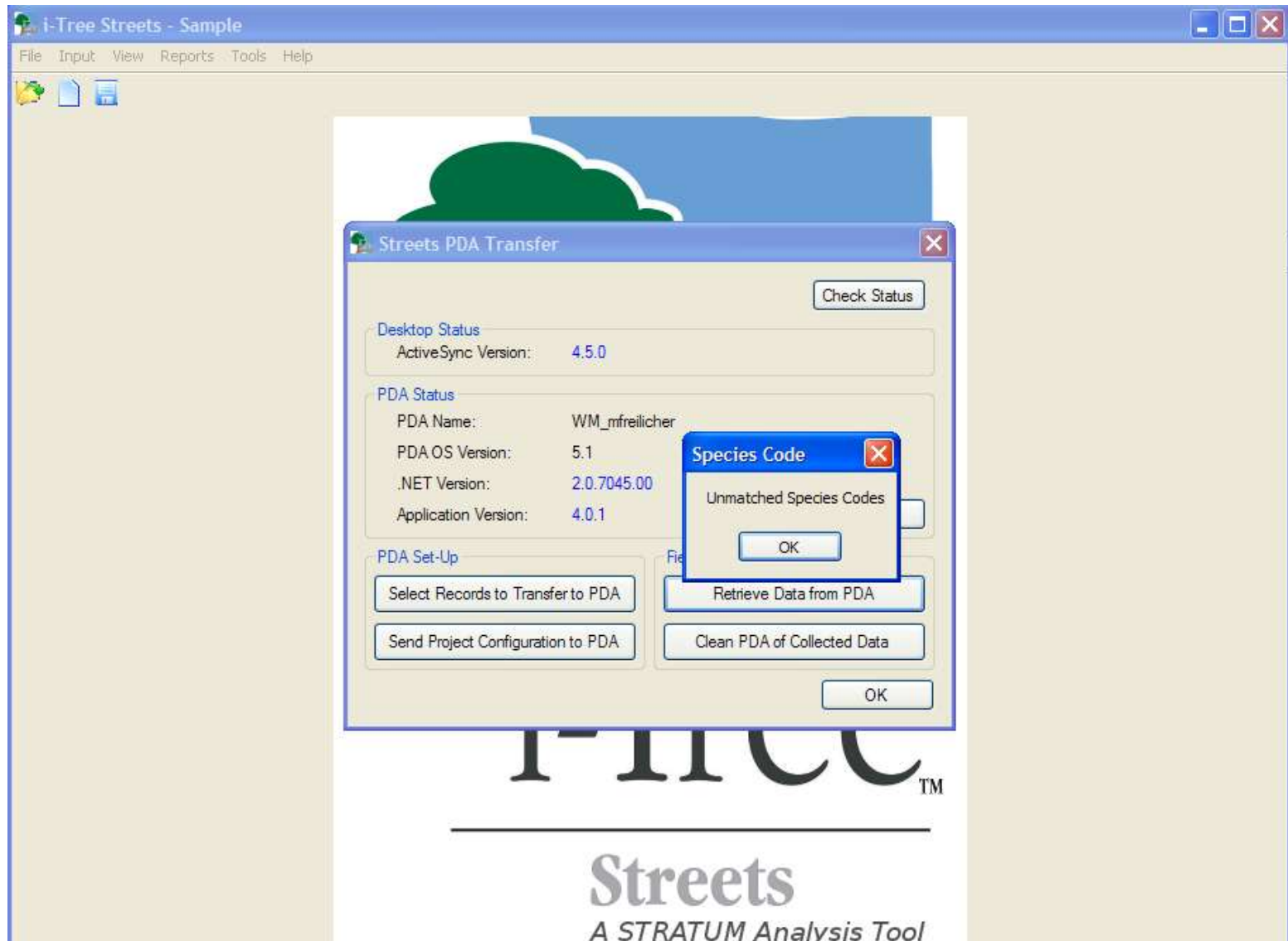
Once connected, select **Retrieve Data from PDA** to import data from external device

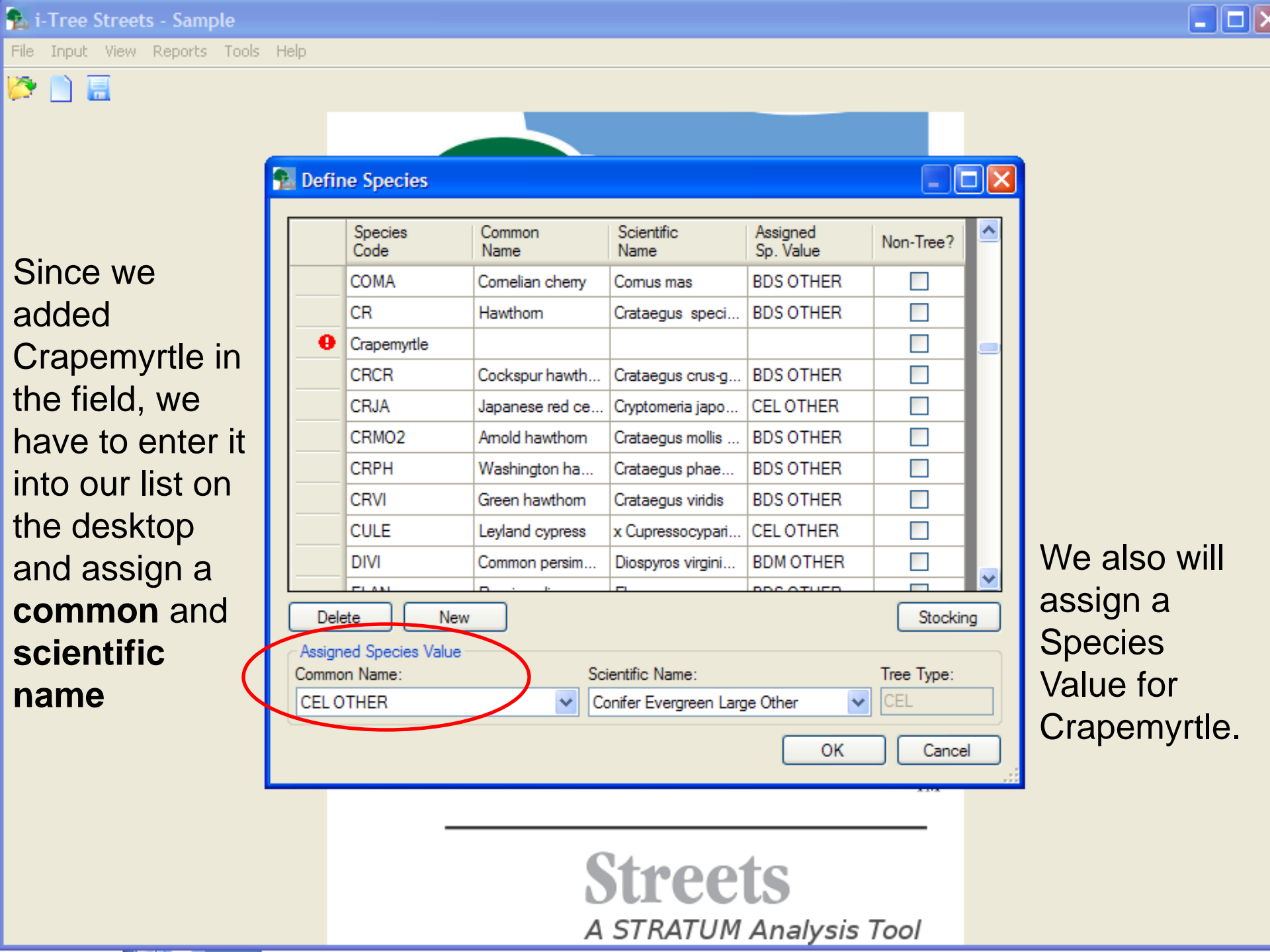


Make sure you have exited out of Streets on the external device before importing data

Streets
A STRATUM Analysis Tool

Unmatched Species Codes





Since we added Crapemyrtle in the field, we have to enter it into our list on the desktop and assign a common and scientific name

We also will assign a Species Value for Crapemyrtle.

Assigned Species Value

- 🌳 We assign a species value for the i-Tree Streets assessment so that benefits from the tree can be counted
- 🌳 Consider the mature size, tree type, form, and family and genus relationships
- 🌳 You may be able to match to a similar species OR
- 🌳 You may match with a broad category: "Broadleaf Deciduous Small"
- 🌳 The same tree in another area may have a different value if climate or other conditions are more or less favorable



Assign species value for new trees

Define Species

	Species Code	Common Name	Scientific Name	Assigned Sp. Value	Non-Tree?
	COMA	Comelian cherry	Comus mas	BDS OTHER	<input type="checkbox"/>
	CR	Hawthorn	Crataegus speci...	BDS OTHER	<input type="checkbox"/>
▶	Crapemytl	Crapemyrtle	Lagerstroemia in...	BDS OTHER	<input checked="" type="checkbox"/>
	CRCR	Cockspur hawth...	Crataegus crus-g...	BDS OTHER	<input type="checkbox"/>
	CRJA	Japanese red ce...	Cryptomeria japo...	CEL OTHER	<input type="checkbox"/>
	CRMO2	Arnold hawthorn	Crataegus mollis ...	BDS OTHER	<input type="checkbox"/>
	CRPH	Washington ha...	Crataegus phae...	BDS OTHER	<input type="checkbox"/>
	CRVI	Green hawthorn	Crataegus viridis	BDS OTHER	<input type="checkbox"/>
	CULE	Leyland cypress	x Cupressocypari...	CEL OTHER	<input type="checkbox"/>
	DIVI	Common persim...	Diospyros virgin...	BDM OTHER	<input type="checkbox"/>
	FLAN	Flowering dogwood	Flowering dogwood	BDS OTHER	<input type="checkbox"/>

Delete New Stocking

Assigned Species Value

Common Name: Scientific Name: Tree Type:

BDS OTHER Broadleaf Deciduous Small Other BDS

OK Cancel

BDS Other
“Broadleaf
Deciduous
Small Other”



Streets
A STRATUM Analysis Tool



Define Species

Species Code	Assigned Sp. Value
AC	ACSA1
ACBU	ACSA1
ACNE	ACSA1
ACPA	ACSA1
ACPL	ACSA1
ACPL_C	ACSA1
ACPS_S	ACSA1
ACRU	ACSA1
ACSA1	ACSA1
ACSP2	RFI OTHF

Delete

Assigned Species
Common Name:
Silver maple

Tree Type:
BDL

OK Cancel

Stocking Codes

Code	Description	Tree Size
VOID	Potential Planting Site	Large

OK Cancel

Stocking

For non-tree codes click **“Stocking”** to assign non-tree information

Streets
A STRATUM Analysis Tool

To edit any records go to
Input→Records and select Edit

Tree Inventory

	Treeld	Zone	StreetSeg	CityManaged	SpCode	LandUse	SiteType	Lc
▶	1	1	201	Yes	Ginkgo	Single family residential	Front yard	No
	2	1	201	Yes	Chinese hackberry	Single family residential	Front yard	No
	3	1	201	Yes	European white birch	Single family residential	Front yard	No
	4	1	201	Yes	Common crapemyrtle	Single family residential	Front yard	No
	5	1	201	Yes	Chinese pistache	Single family residential	Front yard	No
	6	1	201	Yes	VOID	Not Entered	Not Entered	No
	7	1	201	No	Japanese persimmon	Single family residential	Front yard	No
	8	1	201	Yes	Raywood ash	Single family residential	Front yard	No
	9	1	201	Yes	Coast redwood	Single family residential	Front yard	No
	10	1	201	Yes	Common crapemyrtle	Single family residential	Front yard	No
	11	1	201	Yes	Common crapemyrtle	Single family residential	Front yard	No
	12	1	201	Yes	Sweetgum	Single family residential	Front yard	No
	13	1	201	Yes	VOID	Not Entered	Not Entered	No
	14	1	201	Yes	Black locust 'Purple robe'	Single family residential	Front yard	No
	15	1	201	No	Pear	Single family residential	Front yard	No
	16	1	201	Yes	Tallowtree	Single family residential	Front yard	No
	17	1	201	Yes	White mulberry	Single family residential	Front yard	No
	18	1	201	Yes	VOID	Not Entered	Not Entered	No
	19	1	201	No	Mayten tree	Single family residential	Front yard	No

Total Records: 3353

Streets
A STRATUM Analysis Tool



Then you can edit any of the information collected

Tree Inventory

Treelid	Zone	StreetSeg	CityManaged	SpCode	LandUse	SiteType	Location
1	1	284			y residential	Front yard	No
2	1	284			y residential	Front yard	No
3	1	284			y residential	Front yard	No
4	1	284			y residential	Front yard	No
5	1	284			y residential	Front yard	No
6	1	284			d	Not Entered	No
7	1	284			y residential	Front yard	No
8	1	284			y residential	Front yard	No
9	1	284			y residential	Front yard	No
10	1	284			y residential	Front yard	No
11	1	284			y residential	Front yard	No
12	1	284			y residential	Front yard	No
13	1	284			d	Not Entered	No
14	1	284			y residential	Front yard	No
15	1	284			y residential	Front yard	No
16	1	284			y residential	Front yard	No
17	1	284			y residential	Front yard	No
18	1	284			d	Not Entered	No
19	1	284			y residential	Front yard	No

Inventory Details

General Location **Tree Info** Management Other Pest

Species: Pear SN

DBH(cm): 10

Condition of

Wood: Good

Leaves: Good

Note/Comment:

☐ Note this tree

OK Cancel

New Edit Delete Duplicate Help Total Records: 3353 OK Cancel

Streets
A STRATUM Analysis Tool

Enter local cost and benefit information

- 🌳 Enter local information to customize benefits to your community.
- 🌳 These costs are entered in the **Input** menu
- 🌳 City Information
- 🌳 Annual Costs
- 🌳 Benefit Prices

City Information

- 🌳 Total Municipal Budget
- 🌳 Population
- 🌳 Total Land Area (Sq mi)
- 🌳 Average Sidewalk width (ft)
- 🌳 Total Linear Miles of Street
- 🌳 Average Street width (ft)



Much of this information will be available from your Public Works Department or Tree Warden

Annual Costs

i-Tree Streets - Sample Project

FileInputViewReportsToolsHelp

Define Cost

PublicPrivateAll

Annual Planting (\$)36,000

Annual Pruning (\$)281,500

Annual Tree And Stump Removal And Disposal (\$)31,500

Annual Pest and Disease Control (\$)32,250

Annual Establishment/Imigation (\$)9,000

Annual Price of Repair/mitigation of Infrastructure Damage (\$)25,000

Annual Price of Litter/Storm Clean-Up (\$)21,000

Average annual Litigation And Settlements due to Tree-Related Claims (\$)22,500

Annual Expenditure for Program Administration (\$)78,750

Annual Expenditures for Inspection/Answer Service Requests (\$)22,500

Other Annual Expenditures (\$)

Public Annual Total Program560,000

OK

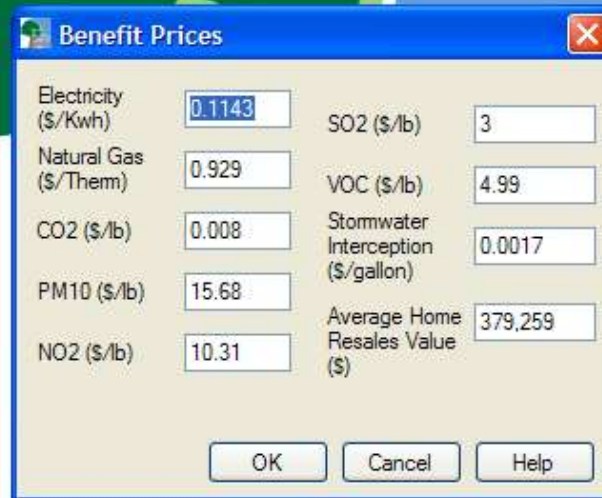
Cancel

Help

Streets
A STRATUM Analysis Tool

Benefit Prices

You can modify these prices for your area or use the defaults



Benefit Prices	
Electricity (\$/Kwh)	0.1143
Natural Gas (\$/Therm)	0.929
CO2 (\$/lb)	0.008
PM10 (\$/lb)	15.68
NO2 (\$/lb)	10.31
SO2 (\$/lb)	3
VOC (\$/lb)	4.99
Stormwater Interception (\$/gallon)	0.0017
Average Home Resales Value (\$)	379,259

OK Cancel Help

It may be difficult to find prices for air pollution

Easier to adjust electricity, natural gas, and average home resale value

May be able to find value for stormwater interception

1-free™

Streets

A STRATUM Analysis Tool

Reports

Benefits

- Energy, stormwater, carbon dioxide, air quality, aesthetic

Structure

- Population summary, species distribution, importance value, condition, land use, site type, canopy cover over street

Replacement value

Pest analysis

Examine reports within i-Tree Streets or Export to Excel

Reports



Report By

☒ Species (Citywide)☐ Zone☐ Street

Report Type

\$ per Tree

Export

Print

Public Private All

/1

Main Report

Business Objects

Davis

Annual Benefits of Public Trees by Species (\$/tree)

3/28/2012

Species	Energy	CO ₂	Air Quality	Stormwater	Aesthetic/Other	Total (\$) Standard Error
London planetree	10.86	1.10	7.98	0.81	131.31	152.07 (±24.54)
Chinese pistache	10.06	0.86	8.31	0.59	86.35	106.16 (±20.34)
Chinese hackberry	23.11	1.88	27.25	1.72	146.84	200.79 (±41.6)
Common crapemyrtl	1.42	0.11	1.58	0.10	12.23	15.44 (±3.47)
Tallowtree	16.25	1.21	17.11	1.15	52.11	87.83 (±27.42)
Callery pear 'Bradfo	9.77	0.83	10.16	0.68	71.83	93.27 (±23.44)
Hind walnut	33.48	1.70	42.95	2.85	101.20	182.17 (±117.22)
Moraine ash	18.94	2.51	18.37	1.16	136.00	176.98 (±58.13)
Raywood ash	3.34	0.52	3.01	0.19	212.97	220.03 (±65.09)
Japanese zelkova	20.21	1.83	22.51	1.42	169.56	215.52 (±57.54)
Honeylocust	26.84	3.50	24.34	1.54	192.89	249.11 (±85.27)
Callery pear 'Aristoc	6.92	0.68	7.05	0.47	79.11	94.23 (±26.51)
Southern magnolia	3.29	0.29	2.62	0.42	32.42	39.04 (±21.3)
Coast redwood	5.41	0.70	6.53	0.85	102.43	115.93 (±29.71)
Modesto ash	31.20	1.91	30.55	2.01	43.16	108.83 (±40.69)
Hackberry	12.78	1.41	14.02	0.85	172.01	201.07 (±50.95)
Pine	8.41	1.14	9.20	1.32	117.45	137.52 (±41.76)
Walnut	12.38	1.64	13.13	0.80	165.87	193.81 (±173.54)
Velvet ash	28.36	2.28	27.29	1.76	65.17	124.85 (±78.87)
Japanese pagoda tree	31.18	2.10	17.82	2.21	161.96	215.28 (±128.27)
Cherry plum	1.43	0.10	1.58	0.10	12.42	15.63 (±4.69)
White alder	16.03	1.20	16.86	1.13	53.24	88.46 (±23.97)
Interior live oak	1.76	0.56	0.93	0.26	62.45	65.95 (±23.02)
European white birch	9.05	0.80	7.79	0.49	30.53	48.66 (±21.69)
Pear	7.12	0.68	7.29	0.49	79.96	95.54 (±28.12)
Ginkgo	10.25	1.64	7.41	0.57	194.92	214.79 (±79.9)
Cork oak	14.67	2.24	5.52	2.21	110.45	135.08 (±44.43)
African sumac	17.12	1.74	22.77	2.09	80.45	124.17 (±40.84)
Black locust (Rosa)	4.40	0.68	4.17	0.25	67.14	76.62 (±20.82)

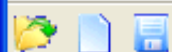
Reports—Many Options

Davis

3/12/2012

Total Annual Benefits, Net Benefits, and Costs for Public Trees

Benefits	Total (\$)	Standard Error Total \$/tree	Standard Error Per Tree \$/capita	Standard Error Per Capita
Energy	307,720(±14,534)	12.93(±.61)	4.79(±.23)	
CO2	29,319(±1,385)	1.23(±.06)	0.46(±.02)	
Air Quality	297,880(±14,069)	12.52(±.59)	4.64(±.22)	
Stormwater	23,939(±1,131)	1.01(±.05)	0.37(±.02)	
Aesthetic/Other	2,413,002(±113,969)	101.40(±4.79)	37.57(±1.77)	
Total Benefits	3,071,860(±145,088)	129.08(±6.1)	47.83(±2.26)	



Benefit-Cost Analysis

Resource Structural Analysis

Replacement Value

Pest Analysis

Population Summary

Species Distribution

Relative Age Distribution

Importance Values

Condition

Relative Performance Index

Stocking Level

Maintenance

Land Use

Site Type

Conflicts

Canopy Cover

Other

Report By

☒ Species (Citywide)☐ Zone☐ Street

Export

Print

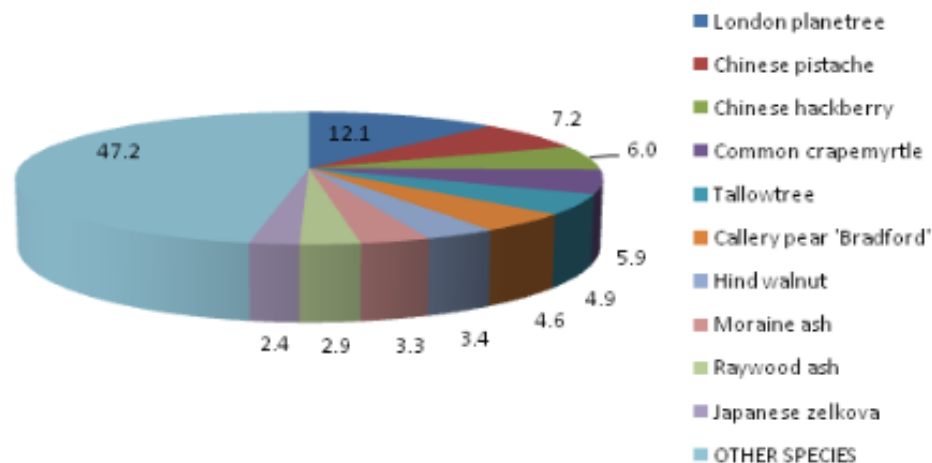
Main Report

Davis

Species

3/29/2012

Tree Species (%)



- Open
- Import
- Export
- Save Project... Ctrl+S
- Save Project As
- Print... Ctrl+P
- Exit

Inventory Data

Reports

Main Report:

Davis

Replacement Value for Public Trees by Species

3/28/2012

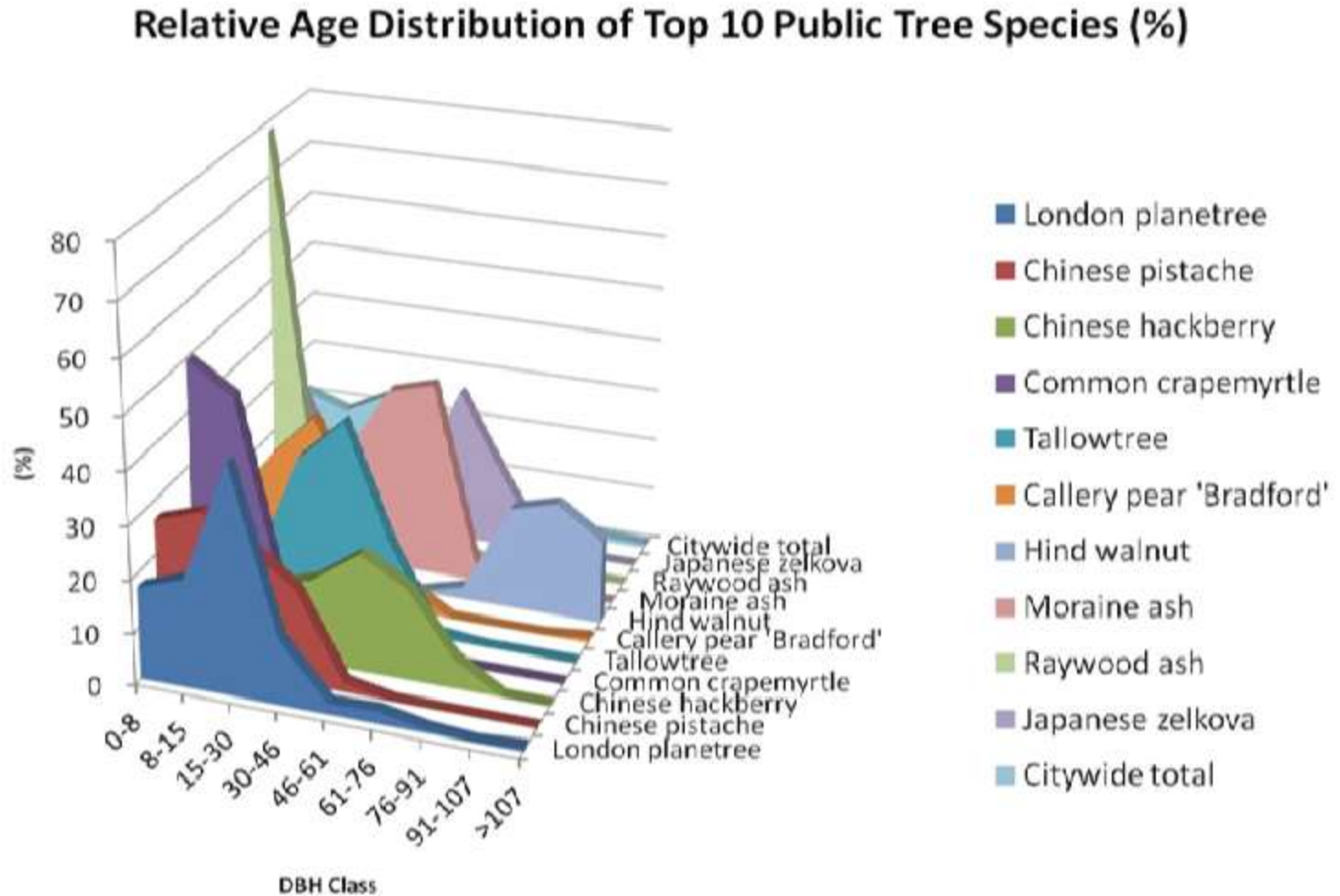
Species	DBH Class (cm)									Total Standard Error
	0-8	8-15	15-30	30-46	46-61	61-76	76-91	91-107	>107	
London planree	76,823	229,240	1,389,304	988,306	320,362	572,242	270,686	0	330,072	4,177,036 (±674,069)
Chinese pistache	77,314	363,623	1,085,988	2,145,869	428,830	0	0	0	0	4,101,624 (±785,682)
Chinese hackberry	23,916	77,764	232,984	702,164	1,851,851	2,507,578	1,129,413	0	0	6,525,669 (±1,351,846)
Common crapemyrtle	116,363	347,118	187,685	0	0	0	0	0	0	651,165 (±146,398)
Tallowtree	9,450	60,003	625,181	2,206,947	2,134,149	130,104	0	0	0	5,165,835 (±1,612,430)
Callery pear 'Bradford'	28,897	142,953	492,663	595,868	387,433	0	0	0	199,721	1,847,535 (±464,209)
Hind walnut	14,349	51,421	50,819	93,351	0	90,016	1,278,756	1,861,603	1,801,644	5,241,960 (±3,373,088)
Moraine ash	0	10,276	220,426	1,007,827	1,984,413	108,901	135,531	0	0	3,467,374 (±1,138,885)
Raywood ash	89,081	10,880	129,995	83,373	56,698	0	0	0	0	370,026 (±109,455)
Japanese zelkova	28,462	38,252	30,497	311,410	1,667,920	1,307,658	0	0	0	3,384,198 (±903,462)
Honeylocust	2,162	5,138	64,056	941,619	1,214,272	93,344	0	0	0	2,320,590 (±794,340)
Callery pear 'Aristocrat'	13,197	79,183	356,074	58,851	0	0	0	0	0	507,305 (±142,740)
Southern magnolia	36,215	37,489	53,164	137,998	66,417	0	0	0	0	331,283 (±180,716)
Coast redwood	19,027	30,119	98,069	131,104	0	0	0	0	187,266	465,585 (±119,329)
Modesto ash	1,851	0	0	0	138,633	426,248	435,567	154,851	0	1,157,149 (±432,615)
Hackberry	7,516	25,837	138,383	265,848	312,549	0	0	0	0	750,134 (±190,086)
Pine	7,736	25,689	251,512	279,543	240,964	93,344	0	0	0	898,789 (±272,904)
Walnut	0	0	327,585	265,848	0	0	0	0	0	593,433 (±531,365)
Velvet ash	0	0	0	46,263	260,290	323,675	22,925	0	0	653,152 (±412,624)
Japanese pagoda tree	0	0	21,602	335,104	1,838,652	596,309	0	0	0	2,791,667 (±1,663,318)
Cherry plum	27,926	19,961	39,864	0	0	0	0	0	0	87,751 (±26,330)
White alder	3,393	4,038	23,194	60,519	33,059	0	0	0	0	124,203 (±33,660)
Interior live oak	17,591	99,862	127,951	0	0	0	0	0	0	245,405 (±85,645)
European white birch	0	4,609	86,005	76,952	0	0	0	90,990	0	258,556 (±115,270)
Pear	6,893	49,877	167,732	121,856	0	0	0	0	0	346,358 (±101,953)
Ginkgo	12,970	3,627	43,332	541,921	217,341	0	0	0	0	819,190 (±304,715)
Cork oak	5,755	38,064	135,948	198,612	487,689	1,181,954	0	0	0	2,048,023 (±673,660)
African sumac	0	6,375	132,152	548,352	636,961	0	189,166	0	0	1,513,007 (±497,676)
Black locust 'Purple r'	10,824	41,766	61,651	0	0	0	0	0	0	114,241 (±45,959)
California white oak	11,836	32,242	201,523	73,400	428,830	0	0	0	0	747,832 (±235,003)
Red maple	21,274	13,698	0	81,935	0	0	0	0	0	116,907 (±40,339)
Goldenrain tree	7,560	69,003	86,407	98,162	111,632	0	0	0	0	372,765 (±153,414)
Japanese flowering cr	25,884	32,567	55,761	0	0	0	0	0	0	114,212 (±28,696)
Chinaberry	16,861	21,959	20,155	25,226	33,900	0	0	0	0	118,102 (±37,685)
Italian stone pine	0	3,710	0	485,084	53,388	0	0	0	0	542,182 (±405,542)
European hornbeam	1,334	0	129,611	632,974	223,265	0	0	0	0	987,184 (±628,517)

Also here--
Export your
Inventory
Data as
.csv file

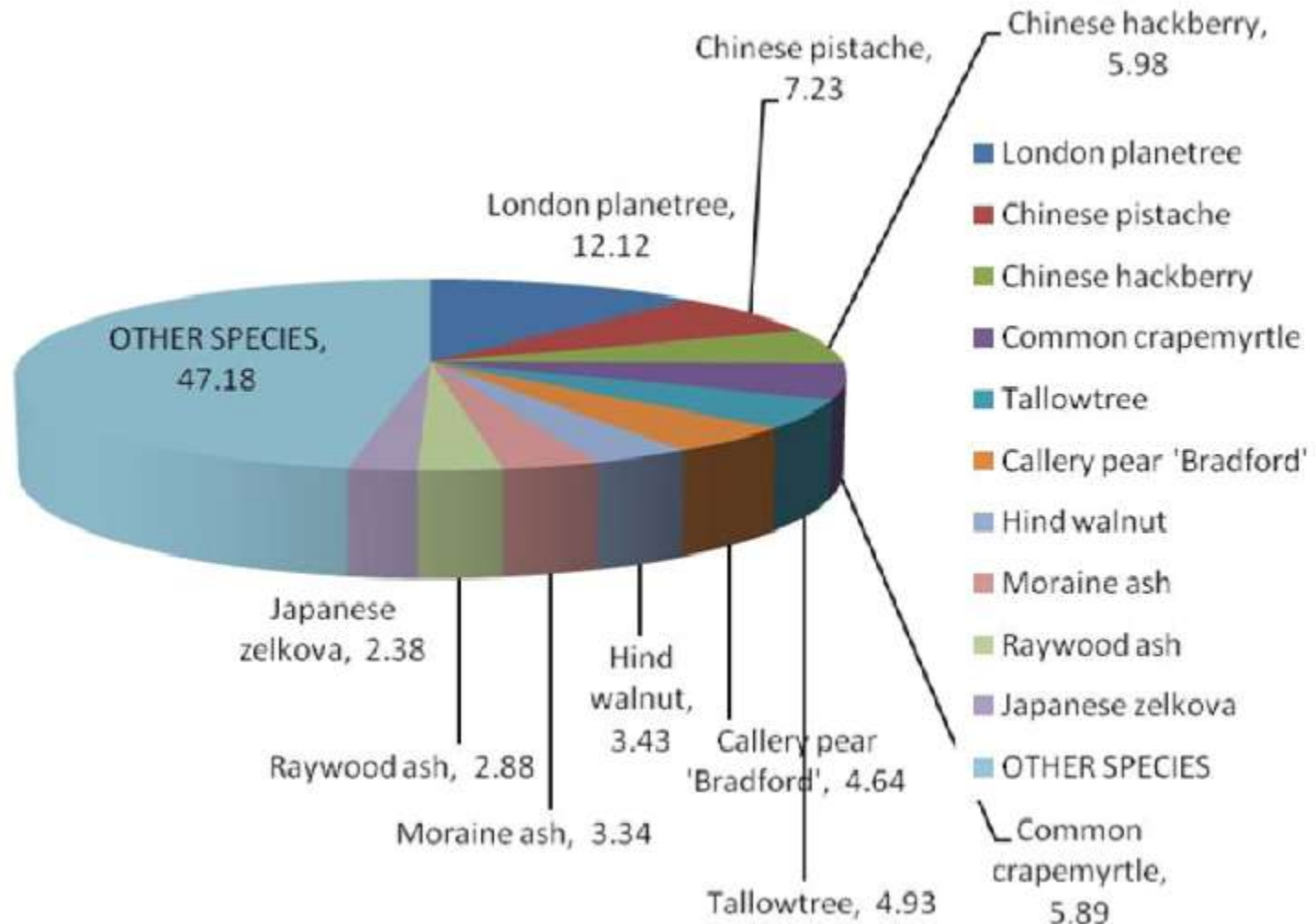
Exporting Reports

- 🌳 If you selected all reports, you will end up with 3 Excel workbooks
 - BenefitOutput
 - PopulationSummary
 - Structural
- 🌳 If you designated all, public, or private trees that designation will be at the end of the workbook title (i.e. StructuralAll)

Working with Excel

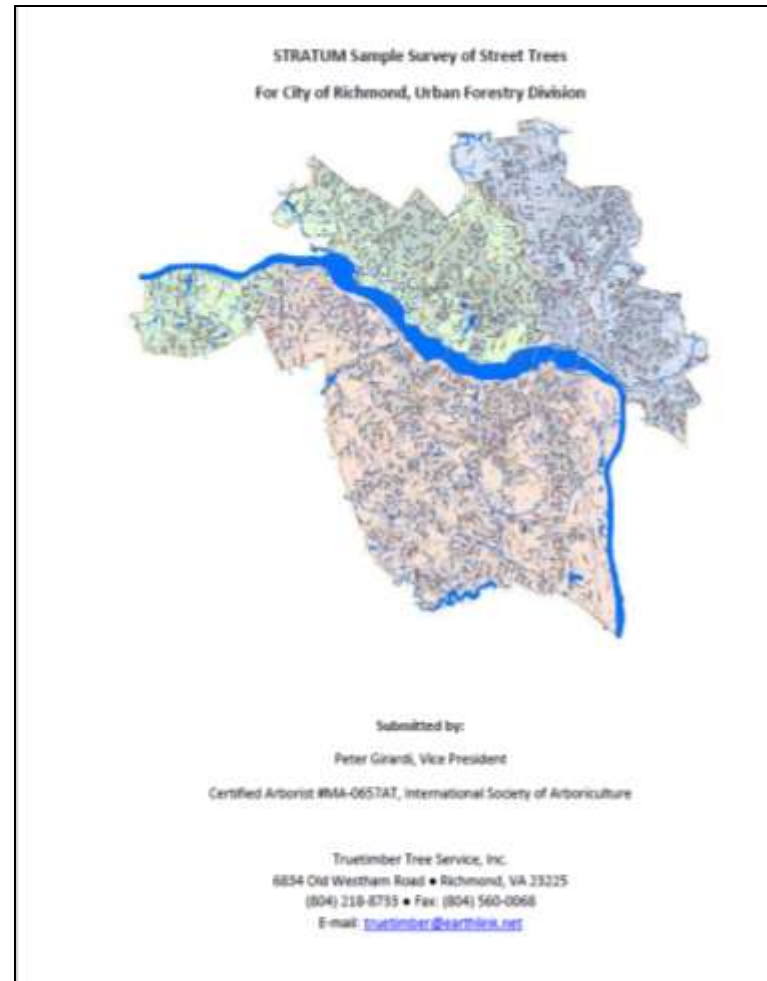
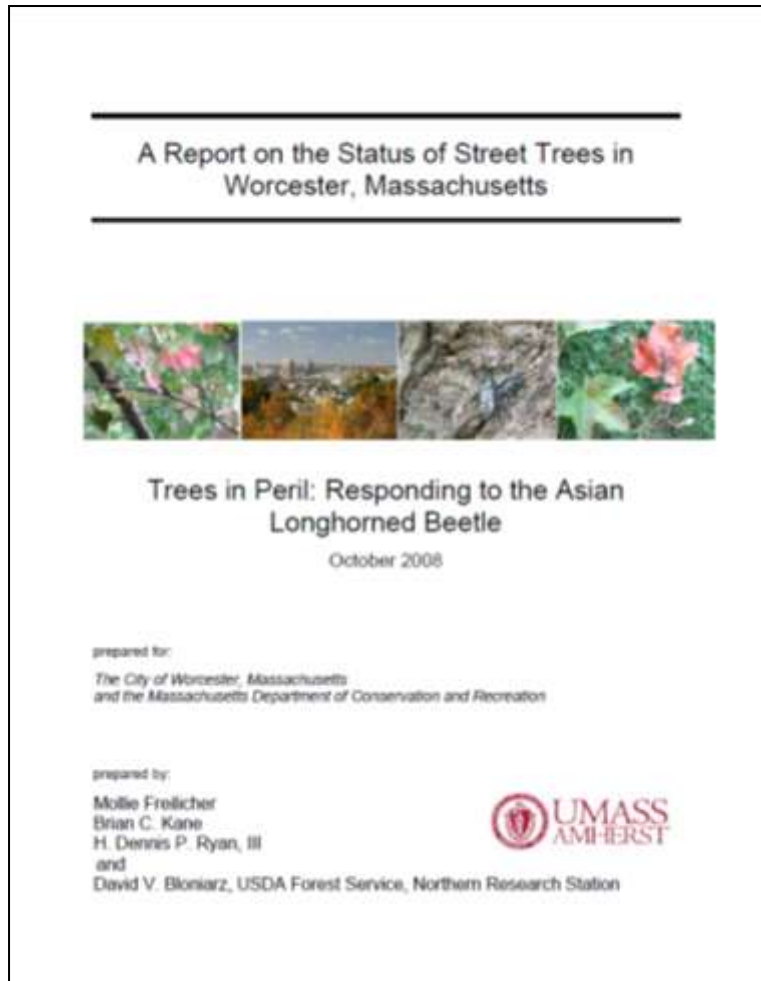


Working with Excel



Where to go with your data

🌳 Use the reports to prepare an analysis of your street trees



Example reports from communities

 Worcester

 Richmond

 Santa Barbara

 Minneapolis

 More at:

 <http://www.itreetools.org/resources/reports.php>

 Contact your state urban and community forestry office for guidance

Grant Opportunities in Massachusetts

- 🌳 MA- DCR Urban & Community Forestry Website:
<http://www.mass.gov/dcr/stewardship/forestry/urban/>
- 🌳 Urban & Community Forestry Challenge Grant
 - Twice yearly—May 1 and November 1 deadlines
- 🌳 Projects that will result in **sustained improvements** in local capacity for excellent urban and community forestry management in key areas including
 - **Tree Inventories** that will inform **management plans**
 - Other areas include strengthening advocacy groups, implementing ordinances, attaining professional staff, attaining Tree City USA status, strategic tree planting, heritage tree care, and others

Information on Grants in Massachusetts

For more information
on grant opportunities in MA:

Contact Eric Seaborn

eric.seaborn@state.ma.us

617-626-1468

Elsewhere, contact your state
Urban and Community
Forestry Program



Where to get assistance

IPED data

- Contact your state urban and community forestry program for guidance
- University Cooperative Extension
- **When in doubt—reach out!**

www.itreetools.org

- Lots of resources there—users forum, manuals and workbooks, support

In Massachusetts, contact the MA-Department of Conservation and Recreation, Urban & Community Forestry Program

Streets Helps You:

- 🌳 Justify and leverage funds
- 🌳 Highlight benefits to public & decision makers
- 🌳 Plan, prioritize, and budget
- 🌳 Benchmark progress
- 🌳 Build partnerships





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