



How to Conduct a Street Tree Inventory

**TREE CITY USA®
BULLETIN**

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Whether a farmer or a diamond merchant, anyone who produces or manages items of value keeps an inventory. The figures are not only a monitor of current value, but a constant guide to decisions. In community forestry, a street tree inventory can be a valuable tool for upgrading management and ensuring a healthy forest for the future.

There have been many people lost in the woods while carrying a compass, an instrument they thought would prevent such a happenstance. Once lost, they found there is nothing magic about carrying a compass — it must be working properly and the bearer must know how to use it.

Community tree inventories are much the same. It is often said that an inventory is the necessary first step toward good management of the tree resource. Yet, it is also well-known that in smaller cities, especially, once an inventory has been completed, the results often end up on the proverbial shelf to gather dust. Rather than being a help to management, the inventory is held up by taxpayers or an elected official as an example of wasted time and money.

In larger cities, an inventory is more often part of the daily routine of tree management. Its initial preparation is a major project, but once completed it is used regularly to plan work for city crews or contractors and to keep tabs on what is accomplished. On this scale, both the inventory and its use are work for experts.

In smaller communities there is more opportunity — and need — to adopt inventory-based tree management. It is toward this goal that Bulletin 23 is dedicated. In these pages are some of the basics needed to conduct a useful inventory. More instruction and professional guidance will be necessary before the work is actually conducted, but for the uninitiated or someone who has had a brief and bad experience with an inventory, the purpose here is to remove some of the mystery and point the way toward inventories that help. As can be seen on page 8, computer technology, combined with the results from years of research, has now made tree inventories more useful than ever.



With some professional training and guidance, volunteers can help gather the data necessary in a street tree inventory.



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Why Do An Inventory?

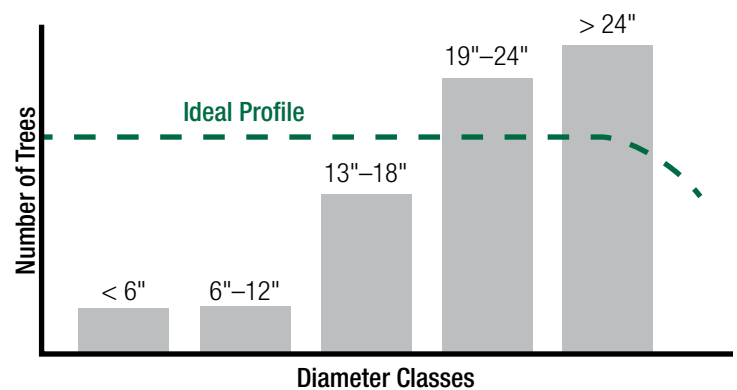
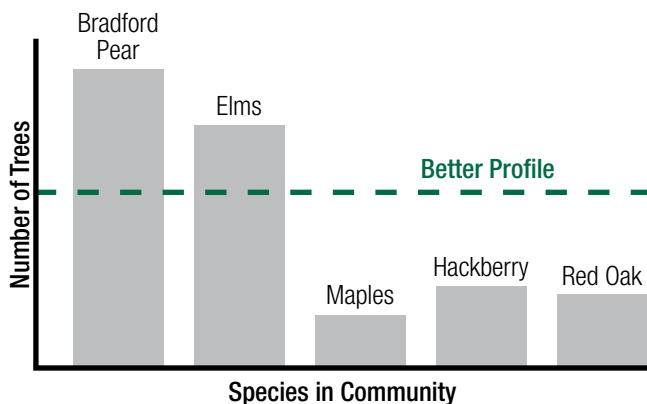
Knowing why an inventory is to be done is the single most important factor in determining success or failure of the project. Before trying to decide what kind of inventory to do or how to do it, make sure the tree board or forestry department has a crystal clear idea of how the inventory will be used in the ongoing management program.

Here are some of the things an inventory can achieve, with appropriate modifications needed depending on the size of the community. Most of these items form the basis of a management plan, a useful annual guide to efficient and effective action.

- Engenders public support, especially if citizens are involved as data collectors.
- Provides an accurate, insightful profile of the species and size (age) composition of the community forest.
- Reveals planting needs and suggests priorities to ensure balance and diversity.
- Identifies hazard trees that should be treated or removed, thereby preventing damage and costly litigation.
- Determines tree maintenance needs, providing a sound basis for how many people are needed to do the work, and how much it will cost.
- Provides information for defensible budget requests that compare in accuracy and sophistication with those from other municipal departments.
- Establishes the monetary value of community trees and convincingly shows the effects of budgeting and management on the resource value.
- Locates trees that are special because of their large size, unusual form, or connections with history. By pinpointing such specimens, special care can be provided and they can be included in educational materials.
- Allows keeping records of work performed to be used for:
 - a. Reporting to the administration and elected officials,
 - b. Better planning of time and crew size needed for tree maintenance,
- c. Ensuring systematic care of all trees, and
- d. Continuity of information when personnel changes occur.
- Enables quick and intelligent responses to property owner questions and requests.
- Provides factual data for coordination with other departments, such as planning and streets.
- Useful for monitoring planting success and growth of trees to enable evaluation of nursery sources.



An inventory of trees in the city rights-of-way offers multiple benefits to managers, tree boards, and residents.



Profiles can be used to foresee problems such as losing large numbers of trees at once as a result of insect or disease epidemics, ice or wind storms, or the limits of longevity being reached. Profiles can guide plans for replacements and new plantings that will mean healthier diversity through the use of suitable species that are currently underrepresented.

Kinds of Inventories

There are many kinds of inventories and even more ways of conducting them. There is no single “right” inventory, although there are definitely correct procedures that must be followed in each one if the results are to be valid and useful.

Selecting the kind of inventory that is best for your community depends on the reasons for conducting it. That is, how are the results to be used? Matching the purpose with the kind of inventory is a necessary step if the inventory is to be useful.



SPECIFIC PROBLEM INVENTORY

This is simply a search for information related only to a specific problem. For example, it may locate all ash trees in preparation for arrival of emerald ash borers, or identify trees that could be hazards if not treated or removed. Its

use is limited to the one problem rather than to broader management.



OFF-STREET LOCATIONS

Trees in places like parks, golf courses, and arboretums can be individually inventoried and keyed to a map with a location number. In more natural areas, where trees grow in dense groups, methods usually used gather

information by sampling and generalizing rather than measuring all trees. For more information, see *Bulletin No. 27: How to Manage Community Natural Areas*.



COVER TYPE SURVEY

Using aerial photographs or remote sensing, the extent and distribution of tree crowns (the canopy) can be quantified. This is useful for monitoring trends, determining energy-saving potential and other ecoservices, and establishing tree

protection requirements for new developments.



SAMPLING METHOD

If interested only in statistical summaries, such as species, size composition, available planting spaces, and similar data, a sample (often 10 percent) of the streets or blocks in the community may be all that is necessary.

This kind of survey is relatively inexpensive and can be quite accurate if the trees are generally homogeneous. If not homogeneous, accuracy is still possible by dividing the city into sections that are reasonably alike, such as old and new areas, and taking samples in each. In either case, the key to accuracy is in making sure the sample is purely random.

If these conditions are met, results of the sample can be generalized to the community as a whole, and accurate profiles can be obtained.



SOFTWARE PROGRAMS

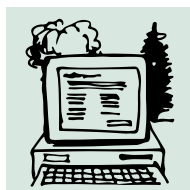
Inventories can always be done on paper forms, but software available from a number of commercial and governmental sources makes the job much easier, more thorough, and less prone to errors. Contact your state urban & community forestry

coordinator for guidance.



COMPLETE INVENTORY — PERIODIC

In a complete survey, all street trees are inventoried and usually keyed to a specific location like a house address or a block. It is a detailed accounting of all trees. It is also the most time-consuming and expensive inventory, but the most accurate.



COMPLETE INVENTORY — CONTINUOUS

This is the same as above except that a record is continuously maintained for each tree and planting site. Maintenance work is prescribed for each tree, and planting is scheduled for the empty sites. As work is accomplished, the records are updated. For managing a community forest and reducing the liability for accidents, this is the most valuable method.

It is therefore the one covered in this Bulletin.

NOTE: In any inventory, even a so-called continuous one, a re-survey is usually necessary every five to 10 years. This is to account for growth, unreported tree work, or removals and other changes in conditions. The exception is if all trees are visited and records updated, including diameter, within that period. In the long run, this could be the most economical, as well as effective, method.

What Data to Collect



One of the first steps in data collection is to determine if the tree is within the legal width of the street right-of-way. City engineers usually have right-of-way information on maps.

Having decided the intended use of the inventory and the kind of inventory needed to collect the information, the next step is to determine exactly what information about each tree or site is needed. Considerable care should be taken with this task, as it is the foundation of your inventory system.

If your information will be fed into a computer for storage and reporting, “fields,” or blanks, will be displayed on the monitor according to the particular program being used. The data collected is entered in these spaces. However, fields should be ignored if the data to be entered is information you do not need. On the other hand, you may need to add fields or enter items in the “remarks” space to include something unique to your management needs.

Most data collection today is done with hand-held devices that allow downloading directly to a computer. If this is not possible, it may be necessary to collect the information on forms and enter it later into the computer. Design the form to coincide exactly with the order in which data is asked for on the computer screen. Omit entries that will not be used. Here is the information most commonly collected:

NAME: Linwood Av TRAPEZOIDER JR. INVENTORY FORM DATE: JULY 1, 1978
 ON: Linwood Av FROM: NORWOOD ST TO: EAST ST PAGE: 5 NAME: Ed Ober

ADDRESS	SIZE	SITE	SPECIES	CDR	DBH	HEIGHT	SHADE	HEALTH	WILL	REMARKS	AREA
2617 LINWOOD AV	1		AMERICAN ELM	95	12	Y	2	Y	Y		127
"	"	"	SHEDD LARIX	12	14	Y	Y	Y	Y		127
2620X "	M	1	REDWOOD	100	12	Y	Y	Y	Y		127

SIZE: 1 - 10-15' 2 - 16-25' 3 - 26-35' 4 - 36-45' 5 - 46-55' 6 - 56-65' 7 - 66-75' 8 - 76-85' 9 - 86-95' 10 - 96-105'
 DBH: 1 - 1" 2 - 2" 3 - 3" 4 - 4" 5 - 5" 6 - 6" 7 - 7" 8 - 8" 9 - 9" 10 - 10" 11 - 11" 12 - 12" 13 - 13" 14 - 14" 15 - 15" 16 - 16" 17 - 17" 18 - 18" 19 - 19" 20 - 20" 21 - 21" 22 - 22" 23 - 23" 24 - 24" 25 - 25" 26 - 26" 27 - 27" 28 - 28" 29 - 29" 30 - 30" 31 - 31" 32 - 32" 33 - 33" 34 - 34" 35 - 35" 36 - 36" 37 - 37" 38 - 38" 39 - 39" 40 - 40" 41 - 41" 42 - 42" 43 - 43" 44 - 44" 45 - 45" 46 - 46" 47 - 47" 48 - 48" 49 - 49" 50 - 50" 51 - 51" 52 - 52" 53 - 53" 54 - 54" 55 - 55" 56 - 56" 57 - 57" 58 - 58" 59 - 59" 60 - 60" 61 - 61" 62 - 62" 63 - 63" 64 - 64" 65 - 65" 66 - 66" 67 - 67" 68 - 68" 69 - 69" 70 - 70" 71 - 71" 72 - 72" 73 - 73" 74 - 74" 75 - 75" 76 - 76" 77 - 77" 78 - 78" 79 - 79" 80 - 80" 81 - 81" 82 - 82" 83 - 83" 84 - 84" 85 - 85" 86 - 86" 87 - 87" 88 - 88" 89 - 89" 90 - 90" 91 - 91" 92 - 92" 93 - 93" 94 - 94" 95 - 95" 96 - 96" 97 - 97" 98 - 98" 99 - 99" 100 - 100"
 HEALTH: 1 - Fair 2 - Fair 3 - Fair 4 - Fair 5 - Fair 6 - Fair 7 - Fair 8 - Fair 9 - Fair 10 - Fair 11 - Fair 12 - Fair 13 - Fair 14 - Fair 15 - Fair 16 - Fair 17 - Fair 18 - Fair 19 - Fair 20 - Fair 21 - Fair 22 - Fair 23 - Fair 24 - Fair 25 - Fair 26 - Fair 27 - Fair 28 - Fair 29 - Fair 30 - Fair 31 - Fair 32 - Fair 33 - Fair 34 - Fair 35 - Fair 36 - Fair 37 - Fair 38 - Fair 39 - Fair 40 - Fair 41 - Fair 42 - Fair 43 - Fair 44 - Fair 45 - Fair 46 - Fair 47 - Fair 48 - Fair 49 - Fair 50 - Fair 51 - Fair 52 - Fair 53 - Fair 54 - Fair 55 - Fair 56 - Fair 57 - Fair 58 - Fair 59 - Fair 60 - Fair 61 - Fair 62 - Fair 63 - Fair 64 - Fair 65 - Fair 66 - Fair 67 - Fair 68 - Fair 69 - Fair 70 - Fair 71 - Fair 72 - Fair 73 - Fair 74 - Fair 75 - Fair 76 - Fair 77 - Fair 78 - Fair 79 - Fair 80 - Fair 81 - Fair 82 - Fair 83 - Fair 84 - Fair 85 - Fair 86 - Fair 87 - Fair 88 - Fair 89 - Fair 90 - Fair 91 - Fair 92 - Fair 93 - Fair 94 - Fair 95 - Fair 96 - Fair 97 - Fair 98 - Fair 99 - Fair 100 - Fair
 WILL: 1 - Safety Zone 2 - Safety Zone 3 - Safety Zone 4 - Safety Zone 5 - Safety Zone 6 - Safety Zone 7 - Safety Zone 8 - Safety Zone 9 - Safety Zone 10 - Safety Zone 11 - Safety Zone 12 - Safety Zone 13 - Safety Zone 14 - Safety Zone 15 - Safety Zone 16 - Safety Zone 17 - Safety Zone 18 - Safety Zone 19 - Safety Zone 20 - Safety Zone 21 - Safety Zone 22 - Safety Zone 23 - Safety Zone 24 - Safety Zone 25 - Safety Zone 26 - Safety Zone 27 - Safety Zone 28 - Safety Zone 29 - Safety Zone 30 - Safety Zone 31 - Safety Zone 32 - Safety Zone 33 - Safety Zone 34 - Safety Zone 35 - Safety Zone 36 - Safety Zone 37 - Safety Zone 38 - Safety Zone 39 - Safety Zone 40 - Safety Zone 41 - Safety Zone 42 - Safety Zone 43 - Safety Zone 44 - Safety Zone 45 - Safety Zone 46 - Safety Zone 47 - Safety Zone 48 - Safety Zone 49 - Safety Zone 50 - Safety Zone 51 - Safety Zone 52 - Safety Zone 53 - Safety Zone 54 - Safety Zone 55 - Safety Zone 56 - Safety Zone 57 - Safety Zone 58 - Safety Zone 59 - Safety Zone 60 - Safety Zone 61 - Safety Zone 62 - Safety Zone 63 - Safety Zone 64 - Safety Zone 65 - Safety Zone 66 - Safety Zone 67 - Safety Zone 68 - Safety Zone 69 - Safety Zone 70 - Safety Zone 71 - Safety Zone 72 - Safety Zone 73 - Safety Zone 74 - Safety Zone 75 - Safety Zone 76 - Safety Zone 77 - Safety Zone 78 - Safety Zone 79 - Safety Zone 80 - Safety Zone 81 - Safety Zone 82 - Safety Zone 83 - Safety Zone 84 - Safety Zone 85 - Safety Zone 86 - Safety Zone 87 - Safety Zone 88 - Safety Zone 89 - Safety Zone 90 - Safety Zone 91 - Safety Zone 92 - Safety Zone 93 - Safety Zone 94 - Safety Zone 95 - Safety Zone 96 - Safety Zone 97 - Safety Zone 98 - Safety Zone 99 - Safety Zone 100 - Safety Zone
 SURFACE: 1 - Concrete 2 - Concrete 3 - Concrete 4 - Concrete 5 - Concrete 6 - Concrete 7 - Concrete 8 - Concrete 9 - Concrete 10 - Concrete 11 - Concrete 12 - Concrete 13 - Concrete 14 - Concrete 15 - Concrete 16 - Concrete 17 - Concrete 18 - Concrete 19 - Concrete 20 - Concrete 21 - Concrete 22 - Concrete 23 - Concrete 24 - Concrete 25 - Concrete 26 - Concrete 27 - Concrete 28 - Concrete 29 - Concrete 30 - Concrete 31 - Concrete 32 - Concrete 33 - Concrete 34 - Concrete 35 - Concrete 36 - Concrete 37 - Concrete 38 - Concrete 39 - Concrete 40 - Concrete 41 - Concrete 42 - Concrete 43 - Concrete 44 - Concrete 45 - Concrete 46 - Concrete 47 - Concrete 48 - Concrete 49 - Concrete 50 - Concrete 51 - Concrete 52 - Concrete 53 - Concrete 54 - Concrete 55 - Concrete 56 - Concrete 57 - Concrete 58 - Concrete 59 - Concrete 60 - Concrete 61 - Concrete 62 - Concrete 63 - Concrete 64 - Concrete 65 - Concrete 66 - Concrete 67 - Concrete 68 - Concrete 69 - Concrete 70 - Concrete 71 - Concrete 72 - Concrete 73 - Concrete 74 - Concrete 75 - Concrete 76 - Concrete 77 - Concrete 78 - Concrete 79 - Concrete 80 - Concrete 81 - Concrete 82 - Concrete 83 - Concrete 84 - Concrete 85 - Concrete 86 - Concrete 87 - Concrete 88 - Concrete 89 - Concrete 90 - Concrete 91 - Concrete 92 - Concrete 93 - Concrete 94 - Concrete 95 - Concrete 96 - Concrete 97 - Concrete 98 - Concrete 99 - Concrete 100 - Concrete
 AREA: 1 - Both 2 - Both 3 - Both 4 - Both 5 - Both 6 - Both 7 - Both 8 - Both 9 - Both 10 - Both 11 - Both 12 - Both 13 - Both 14 - Both 15 - Both 16 - Both 17 - Both 18 - Both 19 - Both 20 - Both 21 - Both 22 - Both 23 - Both 24 - Both 25 - Both 26 - Both 27 - Both 28 - Both 29 - Both 30 - Both 31 - Both 32 - Both 33 - Both 34 - Both 35 - Both 36 - Both 37 - Both 38 - Both 39 - Both 40 - Both 41 - Both 42 - Both 43 - Both 44 - Both 45 - Both 46 - Both 47 - Both 48 - Both 49 - Both 50 - Both 51 - Both 52 - Both 53 - Both 54 - Both 55 - Both 56 - Both 57 - Both 58 - Both 59 - Both 60 - Both 61 - Both 62 - Both 63 - Both 64 - Both 65 - Both 66 - Both 67 - Both 68 - Both 69 - Both 70 - Both 71 - Both 72 - Both 73 - Both 74 - Both 75 - Both 76 - Both 77 - Both 78 - Both 79 - Both 80 - Both 81 - Both 82 - Both 83 - Both 84 - Both 85 - Both 86 - Both 87 - Both 88 - Both 89 - Both 90 - Both 91 - Both 92 - Both 93 - Both 94 - Both 95 - Both 96 - Both 97 - Both 98 - Both 99 - Both 100 - Both

If hand-held devices are not used, inventory forms should be designed to record information in the same order it will be entered into the computer. This may mean simply having a form for each tree or site that duplicates the screen format, or it may be in columnar format. Fields that will not be used have been deleted from the data collection form.

1 LOCATION

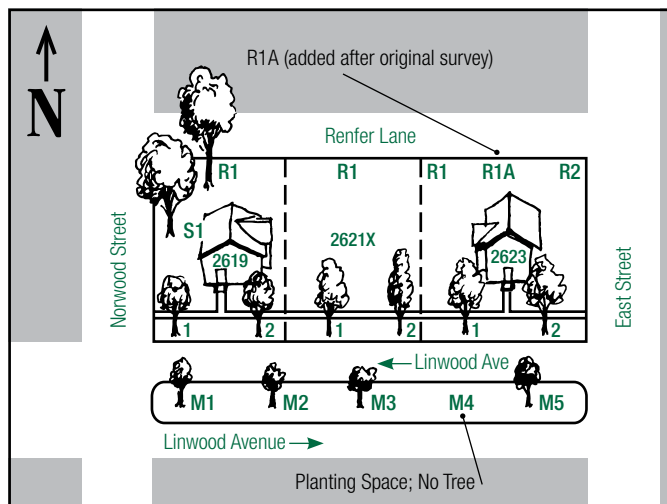
The location of each tree or empty space suitable for planting can be identified in a number of ways. Regardless of method and unless a high quality GPS unit is used, it is always a challenge trying to account for unique circumstances.

The objective is to identify the tree or plantable space in a way that it can be relocated by someone else at a later date. The method shown here ties each to a house or building number. For vacant lots, a fictitious number is given with a letter added, such as “X,” to alert others that there is no building there.

Trees and spaces (referred to as “site”) are numbered sequentially in the same direction as ascending house numbers. “S” for side and “R” for rear account for trees on corner lots or where the back of the house adjoins a second street. Trees on a median strip can be tied to a fictitious address corresponding to the hundred block. In the example at right, these trees would be recorded at 2600X Linwood Avenue as M1, M2, etc. When a tree or space has been omitted and must be added after the survey, alphabetical letters can be added in sequence (1A, 2A, etc.). If using a computer program, simply add the new tree or space, giving it the appropriate sequential number and the computer will renumber all the rest of the trees at that address.

It is important to include block information with each tree or planting site record so that all trees on a specific street can be retrieved from the database regardless of house number. For example, Tree S1 at 2619 Linwood Avenue could be included with trees reported (for pruning, let’s say) with all trees at that house, all trees at houses on Linwood Avenue, or all trees on Norwood Street.

Sometimes, a community’s management goals do not require knowing what trees are at a specific address. In this case, windshield surveys are used and trees are simply recorded by street or block. “Address” information on the illustrated inventory form would be omitted (as would any other data columns not needed). However, this method can still take advantage of computer programs. If the program requires street addresses in order to work, a street or block can be given a fictitious address, such as 2600X Linwood Avenue, with all trees on that street or block numbered sequentially.



A sequential numbering system must account for all trees and planting spaces in a way they can be relocated by work crews. In this system, all street trees and planting sites are tied to house addresses.

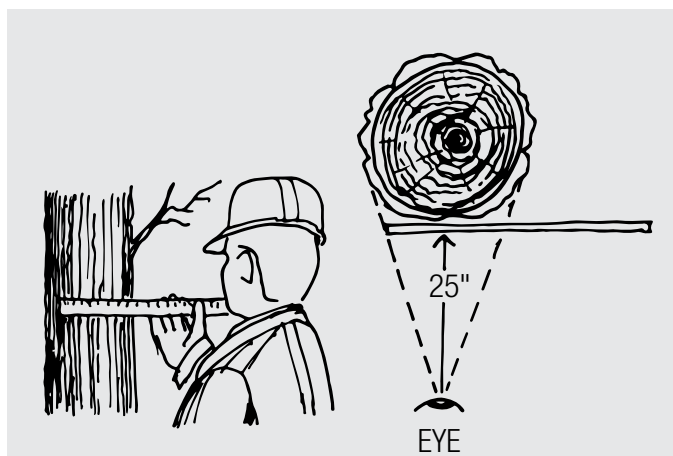
2 TREE INFORMATION

Species *Locust, Black* *Robinia pseudoacacia* *LOCB*
Maple, Sugar *Acer saccharum* *MPSU*

A checklist of trees known to be in the community should be developed before the inventory begins. Abbreviations can be made up or adopted from a standard list such as one developed by researchers in the U.S. Forest Service. A good computer program will allow the user to switch back and forth between common and scientific names at will. Some require a numeric code for each species in order to manipulate or summarize data.

Size <3" 4"-6" 7"-12" 13"-18" 19"-24" 25"-30" >30"

Taking exact measurements of diameter slows data collection and is usually not important for managing the trees. Therefore, size categories with reasonable, but usually arbitrary, spreads should be used. Height and crown widths are usually unnecessary for management purposes. If needed, they can be obtained by measuring a sample of trees and correlating these measurements with diameter classes of species growing under the same general conditions.



With practice, tree diameters can be estimated by eye with a high degree of accuracy. For greater accuracy or to check estimates occasionally, a Biltmore stick is the quickest way. This device resembles a yard stick but is calibrated to be read in inches of diameter.

Condition Excellent Good Fair Poor Dead

Condition classes can be described in general terms for data collectors. For higher precision, criteria in a publication such as *Guide for Plant Appraisal* can be used for classifying. Summaries of these data are good indicators of the health of the urban forest. When combined (by a computer program) with species, size, and location, they can also help estimate the monetary value of trees.

3 MAINTENANCE NEEDS

Code

0 Work Needed	4 Routine Prune
1 Plant	5 Training Prune
2 Remove	6 Remove Grate
3 Priority Prune (safety)	7 Remove Stump

This entry is the guide to planning work and determining budgets. The list of treatments or practices will depend on which ones are being used (or could be used) in the particular community. Each is coded to save space on data collection forms.

4 SITE INFORMATION

Some inventory programs have entry fields for information that describes site features important to management. The entry may call for a simple "yes" or "no," or measurement. For example:

Overhead Lines	Y
Treelawn	8'
Sidewalk Damage	N
Land Use	164

Land use, coded in the above example using a list of U.S. Forest Service code numbers, is used by the computer as the tree's location to calculate tree value. If using plant appraisal protocols and the formula that considers size, species, condition, and location, a tree coded 164 (adjacent to privately owned, suburban residential property) would receive a higher dollar value than the same tree coded 324 (next to a freeway).

Again, use only that site information that helps meet an objective, or purpose, of your inventory. Otherwise, it is a waste of time. Also, this information is no substitute for actually inspecting a site before selecting planting stock or planning some other project.

5 OTHER INFORMATION

Insect and disease problems should be included when possible. This is a good way to discover the arrival of invasive pests, track their spread, and alert managers to the need for control measures.

A remarks category can also be used. This is helpful when the inventory is used for responding to phone calls from residents and maintaining work histories and plans. Remarks can include anything from the presence of a dangerous dog to noteworthy specimen trees. The drawback of a remarks field is that the information can usually not be summarized by computer or retrieved by topic unless it is coded and built into the program being used.

Managing the Project



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A successful inventory project has four essential steps:

1 PLAN CAREFULLY

Besides carefully determining the objectives for the inventory and deciding what data must be collected to meet them, a form must be designed to allow for all conditions that may be encountered. This being virtually impossible, flexibility should be built in, such as allowing space for features or conditions to be added that were not anticipated. Part of planning is also developing comprehensive checklists or code sheets for data collectors, and making “rules” for how measurements will be taken, tree numbers will be assigned and other field situations will be handled to ensure consistency. Test everything by working through the trees on several blocks in different parts of the community, refining the procedures, and putting everything in writing for each data collector.

2 TRAIN

Whether using volunteers, summer youth crews, or paid employees, begin with a workshop session. Explain the “why” behind the project as well as procedural rules and your expectations of quality work. Then conduct a practice session on the streets, working with all individuals or teams. (Teams of two are most efficient when using non-professionals.) Be sure to explain a procedure for handling unknown species or other problems that require delayed data recording or the supervisor’s assistance.

To prevent problems from suspicious character reports, it helps to notify the city police and other city departments about when and where crews will be working. Identifying

inventory workers with customized T-shirts, caps, or windbreakers also helps. Residents can be alerted through the news media. Crews should be briefed about how to handle inquiries from residents. A handout explaining the project is a good device and reduces the problem of crew members spending time in conversations.

3 SUPERVISE

The history of street tree inventories teaches that spot checking for accuracy and honesty is essential. The nature and intensity of supervision will vary widely, but in all cases it should be done regularly by the person responsible for the project. Brief, daily meetings can be a useful way to discuss problems and work out solutions.

4 USE!

Make sure that inventory reports are used at every opportunity. Continuous inventories need regular updating. This requires a clear procedure for editing or adding data. In larger communities, this may be daily attention by a clerk or technician to update the database as crew reports are turned in, permits for tree work are issued, or citizen calls are received. In smaller communities, updates are best done periodically but regularly (perhaps once a month) by a tree board member or the forester. Tree work, blowdowns, new plantings, and other changes need to be reflected promptly in the inventory.

Managing the Data

There are many computer programs available for data storage and use, each with different capabilities and limitations. The urban and community forestry specialist in your state forester’s office will be able to provide suggestions and possibly a list of suppliers. You might also want to search online for “street tree inventory.” When shopping for software, be sure to consider these criteria:

- Is it user-friendly? No previous experience should be necessary if you are using volunteers or do not have sophisticated technical assistance at your disposal.
- Does the vendor offer online technical support?
- Does the vendor have a track record, i.e., is it a stable, established company or organization? There is nothing as frustrating as getting your inventory set up, then needing technical assistance only to discover that the supplier is no longer available to help.
- Does the program offer a full range of abilities? For example, can it do everything described in this bulletin?
- Is editing — that is, correcting or updating data — fast and *easy*?
- Can it be expanded as the community and its forestry program grow and more sophisticated features are wanted?
- Is the cost well within your budget?
- Is there a guarantee of satisfaction offered?

Reports

There are many ways in which data can be reported. Once again, how it is done depends on the purpose of the inventory and how the data help meet management needs. Most frequently, the summaries helps guide decisions in developing a management plan, illustrate budget requests, justify programs, or provide information to city officials for making public presentations or fielding inquiries.

Here are some examples of ways data can be reported:

- **All trees at a single address**

2611X LINWOOD AVENUE				
#1	Red Oak	13"-18" DBH	Cond.: Good	Value \$1,921
#2	Little Leaf Linden	7"-12" DBH	Cond.: Good	Value \$1,225
#R1	(Planting site)			

- **All trees on a block or street**

On LINWOOD AVENUE from NORWOOD STREET to EAST STREET					
Tree #	Species	Diameter	Condition	Maintenance	
2619 1	American Elm	25"-30"	Fair	Priority Prune	
2619 2	Silver Maple	13"-18"	Poor	Remove	
2621X 1	Red Oak	13"-18"	Good		
2621X 2	Little Leaf Linden	7"-12"	Good	Routine Prune	
2623 1	Dead	7"-12"	Dead	Remove	
2623 2	Fl Crab Apple	<6"	Excellent	Remove State	

- **All trees needing specified maintenance**

ALL TREES IN NEED OF PRIORITY PRUNE			
On LINWOOD AVENUE			
2619	1	American Elm	25"-30"
2690	3	Green Ash	12"-18"
On MARCY LANE			
32	1	Sugar Maple	7"-12"

- **Species frequency for entire city**

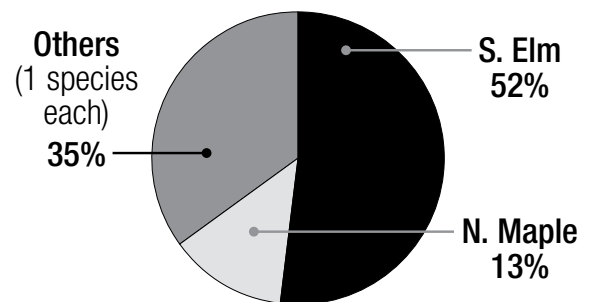
American Elm	<i>Ulmus americana</i>	1,550	40.3%
Green Ash	<i>Frax penn laneolata</i>	329	8.5%
Silver Maple	<i>Acer saccharinum</i>	246	6.4%

- **Species cross-tabulated with any feature (Example: Condition)**

	Excellent	Fair	Good	Poor	Dead	Totals
Ash Species		234	678	29		941
Buckeye	23					23
American Elm	10	1		5		16
Malus Species	2		3			5
Norway Maple			3	2		5
Norway Maple Crimson King		2		2		4
Silver Maple				3		3
Dead					5	5
Report Totals:	35	237	684	41	5	1,002

In short, any information that is collected in an inventory and entered into the computer's database can be retrieved and reported. From this rich storehouse of information, visual aids such as bar graphs and pie charts can be developed to enhance any presentation about the community forestry program.

SPECIES DISTRIBUTION



GETTING ASSISTANCE

It is improbable that a good inventory can be planned or implemented without some professional assistance. The best starting point is to contact the urban and community forestry coordinator in your state forester's office. He or she can provide some direction as well as the names of consultants. The names of qualified professionals in your area are also available from the American Society of Consulting Arborists (301-947-0483) and the International Society of Arboriculture (217-355-9411).

What About GPS and GIS?

Inventory data collection and display are becoming easier and faster for communities with the funds and equipment to use global positioning systems (GPS) and geographic information systems (GIS). Hand-held or backpack instruments receive signals from satellites that pinpoint locations on Earth. Unfortunately, inexpensive GPS units may only be accurate to within several feet, not close enough for properly locating individual trees along a street. More costly units, however, provide the accuracy of survey work.

GIS allows trees or other data points to be displayed electronically on maps. Layers of features such as utilities, fire hydrants, street lights, or individual trees can be added or deleted with a keystroke. This technology provides a wonderful visual display of the community's forest. Clicking on an individual tree can even be used to show all information about that tree.

THE i-TREE SUITE

The i-Tree suite of computer programs can help you collect and analyze data for a wide variety of purposes. These amazing tools can help you get additional information from your inventory that quantifies the value of your community's green infrastructure. These programs have been developed by the U.S. Forest Service in cooperation with Davey Resource Group, the Arbor Day Foundation, the Society of Municipal Arborists, and the International Society of Arboriculture. The use of these programs is free, and they can be downloaded from itreetools.org. Additional applications are being added, but two fundamental programs are below:

i-Tree Streets focuses only on street trees. It can use either existing sample or complete inventory data or be used in the initial collection phase. The results quantify and put a dollar value on the environmental and aesthetic benefits of the community's street trees. It also summarizes the age, size, and conditions of the trees and can be used to guide their future management.

i-Tree Eco looks at the entire urban forest — street trees, park trees, and privately owned trees. It relies on either a complete inventory or, more commonly, data from randomly located plots. It requires local air pollution and meteorological data but then quantifies the environmental effects and value of the urban forest. It also summarizes the overall structure of the trees (age, size, etc.).

FOR MORE INFORMATION

For sources of additional information about inventories, please visit arborday.org/bulletins.

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