

COMMUNITY FOREST INVENTORY DECISION MODEL: Choosing an Approach for a Community Forest Inventory or Assessment

Choosing the type of inventory or assessment that will be most useful for your community can be complicated. There are many different options available. This provides some basic information on the various types of inventory and assessment that can be performed. The table on page 25 provides some guidance on the types of inventory that are most useful for communities of various sizes. This is just one piece of the decision process. Get additional information from Tree Trust, Extension or DNR specialists, talk to city foresters, and ask consultants for detailed information on the services they provide.

Windshield Survey — A windshield survey may be just the first pass as a community prepares for a complete inventory, or it may provide enough anecdotal information for a small community to initiate minimal management.

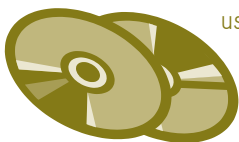
Complete Tally — This is an economical system that may be useful to small communities or in individual work units within larger cities. All public trees in the community are tallied, but the data is not linked to specific street locations. Minimal data collection makes it a very fast system to implement. The tally should be repeated every few years. Data can be used for strategic planning, but it is not particularly useful for daily management (i.e. dispatching work crews). Creating sub-categories by species, size, and condition class provides additional detail and allows some basic analysis. Personnel who are collecting tally data should be trained to identify potential hazard trees - they can either perform a hazard assessment at the time or flag the location for a follow-up exam. A tally is a good system for a first-time inventory, although many communities have used it effectively for years.



Representative Sample Survey — This is a sophisticated method to create a baseline that can be used for strategic planning, however data is not linked to street location for daily management decisions. Sample sites are structured to represent the overall composition of the tree population. This is most effective for medium to large communities when a complete tree inventory is unnecessary or cost prohibitive. The sample survey can be even more effective in combination with a tally system and fewer sample points may be required.



Paper File — The data collected may be as simple or as complex as the forester wants to make it, depending on current and anticipated management. Updating information on a paper system is cumbersome, and foresters should choose their data fields carefully. It is difficult to prepare data analysis other than basic summaries. Because it is so labor intensive to maintain accurate data, paper files frequently fall into disrepair. With improvements in electronic technology, very few communities still maintain a paper inventory, although this remains a viable approach for small communities.

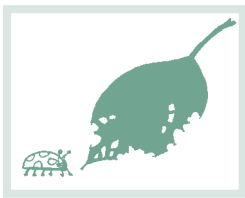


Data Collection with a Personal Digital Assistant — Free software is available that can be used with a PDA to collect data quickly and efficiently. Data can be downloaded into a database on a desktop computer. This is a simple, user-friendly program that has basic analysis and report features.

Spreadsheet/Database — This system inventories 100% of the public trees using a standard spreadsheet or database program to manage data. The community has the opportunity to decide exactly how much information will be collected on each tree and to design analysis and reports. Independent consultants are available to help design the program. This is a low-cost alternative for small to medium-sized communities, particularly if they do not want to perform complicated analysis of their tree population. The community must have

someone on staff that has experience with the software, and recognize the time commitment required to keep data and software current. If data is digitally linked to a geographic location it may be used to develop a tree layer for the city GIS.

Commercial Inventory Software — Commercial inventory programs have been designed for high-end use by medium to large communities. A user-friendly interface allows easy manipulation and analysis and varying levels of customization. Street and park tree data may be linked to GIS. Full-service consulting companies provide technical support ranging from simple trouble-shooting to a complete turn-key package in which the consultant collects, analyzes and maintains the data. While commercial inventory software can be a very powerful tool, it requires significant investment to maintain the data.



Forest Health Assessment — Survey all or part of the community for insect or disease agents that have the potential to significantly impact the health of the forest. Examples include Dutch elm disease, oak wilt, and pine bark beetles. A survey could also be performed to determine the general health of the community forest to withstand environmental stress or future attack by insect and disease agents such as gypsy moth. Some form of assessment should be completed before any management activities are initiated.

Canopy Analysis — Canopy cover can be analyzed using aerial photos or satellite data to monitor change. Canopy cover can be compared to national standards based on land use (commercial, residential, industrial), and it can be used to make coarse estimates for environmental values (stormwater retention, air quality). Canopy Analysis may be most useful for rapidly growing communities to identify and protect green space, or for developed communities to measure the effectiveness of a street tree program.

City Green (software from American Forests) — is an example of canopy analysis that also uses field sampling data to analyze current and future environmental benefits of tree cover. It functions as an add-on to ArcView.



Natural Resources Assessment — Significant natural resources are identified and inventoried to produce an analysis that can be used to guide conservation and development decisions across the community and in surrounding rural land. This is an extremely useful tool in communities that are experiencing rapid growth, leading to protection of sensitive resources.

Community Forest Inventory Recommendation Table

Approximate Public Street Tree Population =	<1,000	1,000 - 5,000	5,000-10,000	>10,000	Commentary
Windshield Survey	■ ■ ■	■ ■	■		The first pass through a community; very little detail and no record of individual trees except for notation of trees that need immediate removal or hazard evaluation.
Complete Tally	■ ■ ■	■ ■ ■	■ ■ (by work unit)	■ ■ (by work unit)	Complete count of all trees in the community with minimal data collection; no data linked to street address. Creating sub-categories for species, size, and condition class provides some level of detail.
Representative Sample Survey			■ ■	■ ■	Structured sample of about 2,000-2500 trees; results can be extrapolated across the community. Sampling can be a very effective tool when combined with a complete tally system.
Paper File	■ ■	■			Detailed record of individual trees kept on index cards or data sheets; data is linked to street address. This system is very difficult to update, sort, query, or extract summary data.
Database with Personal Digital Assistant	■ ■	■ ■ ■	■ ■		Data collected with a personal digital assistant and downloaded to a desktop computer. Free software available. Analysis capability is somewhat limited.
Customized Spreadsheet or Database	■ ■	■ ■ ■	■ ■	■	Complete tree inventory with varying levels of data collection; data is linked to street location. Report and analysis capability depends on the program and operator sophistication; may be linked to GIS.
Commercial Inventory Package		■ ■	■ ■ ■	■ ■ ■	Complete tree inventory with high level of data collection linked to street location. Most systems provide a variety of analysis options. Technical support is usually available
Community Size and Development Potential	Small Town	Small Developing Community	Rapidly Developing Community	Large Developed Community	Commentary
Forest Health Assessment	■ ■	■ ■ ■	■ ■ ■	■ ■	Survey the community forest for one insect or disease agent, or a general survey for multiple threats. Some level of survey must be done before control measures can be implemented.
Canopy Analysis		■ ■	■ ■ ■	■ ■	Remote sensing with ground-truthing. Canopy analysis can be used to estimate economic benefits of the urban forest, to identify areas to be protected, or to track changes over time.
"City Green" Analysis			■	■ ■	Analysis of economic and environmental benefits currently provided by the urban forest. Benefits can be projected into the future as a result of development (canopy loss) or growth of existing trees.
Natural Resources Assessment		■ ■ ■	■ ■ ■	■ ■	Community-wide inventory of all natural resources and open lands for integrated land-use planning. Assessment includes forests, wetlands, riparian areas, old fields, existing agriculture, and developed lands. Analysis can be used to identify unique or sensitive natural resources that need special protection, corridors for trails and wildlife movement, and areas where development can be encouraged.

KEY: ■ = useful ■ ■ = recommended ■ ■ ■ = highly recommended