UFORE Quick Start Guide
For versions 2.0 and older

Introduction

Setting up a UFORE project takes a considerable amount of planning and time. The UFORE process from project preparation to data collection can be complicated. This guide is designed to help walk one through the thought process and steps for designing a UFORE project. The numbers in parentheses refer to the section number in the i-Tree User's Manual which provides more detailed information on that specific subject. This guide is not intended to take the place of the i-Tree User's Manual, but rather is used as a companion "quick-start" guide and checklist to help move one through the UFORE process more efficiently.

UFORE: steps to get started

1. What is the objective of your inventory?

When starting a project, one needs to understand the purpose for the inventory and how the data and results are intended to be used. Establishing goals and objectives, as well as assessing resources (time, money, people) should be the first steps in the UFORE process. For example, is one interested in environmental benefits solely from the trees in the community or assessment area or is shrub and ground cover information desired as well? Will data be re-measured on a periodic basis to follow changes over time or will this be a one-time data-collection event? Is one interested in finding out the community's forest structure, air pollution removal, carbon effects, volatile organic compound emissions, and/or energy effects due to its trees? How will the quality of the data be monitored and maintained? Knowing the objective, scope, and available resources (both human and financial) of the inventory helps determine what data to collect and avoids wasting time in the field collecting unnecessary data.

2. Determine the limits of the study area

No matter if the area is a neighborhood, a park, a city, or multiple counties, one must place defined limits on the area. It is within this defined area of interest that random plots will be placed in order to collect the necessary field data.

3. Detail the data collection needs (Sec. 1.3_step 3, 1.7 and Appendix C)

To meet the objectives established in step 1, determine what data need to be collected. The UFORE model requires certain variables to be collected such as tree species, diameter, crown dimensions, crown light exposure, crown dieback and percent missing, distance/direction to nearby buildings, land use classification, etc. However, other optional variables may also be collected to give more information about the area's ecosystem such as amounts of ground cover type, shrub measurements, and distance/direction to nearby buildings for energy-use effects.

4. How do you want to collect the data? (for paper: Appendix E; for PDA: Sec. 3.2.2)

UFORE allows for various ways to collect and maintain the data depending on the level of technology with which one is comfortable. The UFORE application allows for data to be collected electronically using a PDA with the Windows Mobile 5.0 operating system. Paper data sheets can be printed from the UFORE desktop application or from the i-Tree User's Manual if one is more comfortable collecting data with paper and pencil.

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5. Install UFORE application (Sec. 1.2 and 3.2.2)
Currently, the UFORE shell and PDA utility are only installed via the i-Tree installation CD offered free on the i-Tree website (www.itreetools.org).

6. Create a UFORE project using the UFORE shell (Sec. 1.3.3)
Various databases need to be created using the UFORE Shell in order for the data to be processed. These databases provide necessary information about one's area of interest to the U.S. Forest Service to properly process the data and generate reports.

7. Determine the plot randomization scheme and generate plots (Sec. 1.3, 1.3.3 and 3.4.2)
Because UFORE is a sample-type inventory, sufficient plots are required to accurately assess the study area. The more plots that one has in a study area, the lower the statistical error related to the data collected, thus the more confident one may be when utilizing their data to define and quantify their community forest resource. Randomly placing one's plots within the study area eliminates bias in the data. Typically for large study areas such as entire cities or counties, one would need around 200 1/10th acre sample plots. The results using this many plots would have a statistical error of about 10-15%. The assessment area can be stratified or divided into land-use areas where each land-use area can be assessed separately and compared to each other. It is advisable to generate additional plots within each land-use area to be used as alternates in the event that a selected plot is not accessible for whatever reason.

Randomization can be done several ways, but using GIS technology makes this randomization process very easy. The i-Tree Suite provides a random plot generator utility that can be used with ArcMap 9.1 or previous versions to easily help one create plots within an area of interest. It may be advantageous to seek the help of someone with intermediate skills in GIS to help with this step.

8. Notify property owners to get permission to access their property
Because UFORE looks at the entire ecosystem across one's area of interest, most random plots will fall on private property. It is important to get the property owner's permission to gain access to plots that fall on their property to collect data. Obtain property owner information from parcel maps or GIS layers from the city or county. A letter to the property owners explaining the project and its importance as well as asking their permission to enter onto the property should be sent well in advance of beginning the project. Call the property owners a day or two before collecting data on their property to ensure their permission. If permission is denied, choose a plot from the alternate plot list described in step 7.

9. Collect field data (Sec. 1.7 and Appendix C)
Data collected for a UFORE analysis can be very detailed and intensive. For those not used to such data collection methodologies, it is advisable to become very familiar with the protocol and to "calibrate one's eye" before collecting data that will be used in the project. Practice the collection procedure on sample plots until everyone collecting the data feels comfortable with the protocol. The practice sessions will also help the team decide on standards that will be used by all. Remember, the results are only as good as the data that is put into it.

UFORE data collection requires equipment needed to measure distances, directions, heights, and diameters. See the "Needs for a UFORE Project" section on this document for more details on what may be needed in the field to properly collect data.

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10. Enter field data into UFORE shell (Sec. 1.3.4, 1.4.3, and 3.2.2)
Once collected, the data need to be placed in the UFORE shell before being sent to the U.S. Forest Service for processing. One can manually enter data from paper data sheets into the shell or they can have it automatically placed into the proper database files by using the PDA utility.

11. Send data to U.S. Forest Service for processing (Sec. 1.4.3 and 1.5)
Currently, the UFORE model is written in a statistical analysis computer language called SAS, and thus is not available for general use on one's PC. Until the model is converted to a Windows-based code and available to be used on desktop computers, data must be sent to the U.S. Forest Service Northern Station laboratory in Syracuse, NY. The U.S. Forest Service will analyze the data in 2-6 weeks and return results including designated charts and tables and a pre-formatted report based on the data that were submitted. Therefore, the data should be sent to the U.S. Forest Service only after all plots have been completed.

Field Equipment Needed for UFORE Data Collection:
Sub-meter GPS unit – for accurately finding plot center
External antennae and pole mount – for dense canopy plots
Current, detailed road map – for finding one's way to the plot
Maps showing plot locations
High-resolution aerial photos of plots - to help identify plot centers
Digital camera – for documenting plot center location
Clip board and data sheets
PDA (if using them to collect data)
Power cord to recharge PDA
Diameter tape
2-100 foot (or greater) measuring tapes
Flagging
Pin flags
Plot center stick
Chalk – for marking measured trees
Laser range finder or hypsometer – i.e. LaserAce (http://www.mdl.co.uk/handheld_laser_systems/laserace-hypsometer/index.html) or LaserCraft Contour series (http://store.elecdata.com/range/contour.aspx)
Gallon zip-lock bags – for collecting unknown plants to bring back for identification
Compass
Clinometer
Orange field vest
2-way radio
Copy of project description and permission letter that were sent to property owner
Cell phone
Binoculars
First aid kit

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