



National Forest Health Monitoring Program

Urban Forests of Wisconsin: Pilot Monitoring Project 2002

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As some of you may recall, The Wisconsin Arborist featured a four-part story in 2006/2007 describing the 2002 Urban Forest Pilot Monitoring Project that Wisconsin participated in. The results of that research are now published! Below is the Executive Summary of the research conducted and the conclusions developed from the monitoring project.

Executive Summary

Data from 139 field plots located within the urban areas (U.S. Census Bureau 1990 definition) of Wisconsin were analyzed in this pilot project conducted by the Forest Service, U.S. Department of Agriculture, in partnership with the State of Wisconsin. Trees within the urban boundary were sampled according to modified protocols of the Forest Inventory and Analysis (FIA) and Forest Health Monitoring (FHM) programs. Data were analyzed using the Forest Service's Urban Forest Effects (UFORE) model to quantify and describe the benefits of the Wisconsin urban forest. The data from this project will help fill a national data gap related to trees within urban areas and help provide data on ecosystem services and values provided by urban forests.

Data were analyzed in two subsets based on how the data were collected. FIA data from plots located within the urban boundary were obtained with permission from the Forest Service's North Central Research Station. These data are part of a national system to inventory and monitor forest and timber lands. The other subset of data was collected specifically for this study on plots that were not sampled by FIA for the national inventory. These subsets are referred to as **UFIA_F** and **UFIA⁺**, respectively, throughout the text.

In Wisconsin's urban areas, there are an estimated 130.6 million trees—103.7 million in UFIA_F land and 26.9 million in UFIA⁺ areas. The most common species was *Ostrya virginiana* (eastern hophornbeam), which is a small tree found predominantly in UFIA_F areas. In UFIA⁺ areas, the most

common species was *Acer negundo* (box elder maple). UFIA⁺ areas had a greater percentage of large trees compared with UFIA_F areas.

Forest health data collected on crown condition and occurrence of damage indicated that the urban forests of Wisconsin are healthy and vigorous. The emerald ash borer poses a risk to 12.5 percent of Wisconsin's urban forest, while Asian longhorned beetle could be hosted by over 60 percent of the trees in urban areas.

The 130.6 million urban trees in Wisconsin have an estimated structural value of \$17 billion, provide an annual energy saving to residents of \$24.3 million, remove \$36.3 million worth of pollution from the air, and store 6.1 million tons of carbon.

The statewide survey of Wisconsin's urban forest is one of a series of pilot studies initiated to determine the structure, condition, and function of forests in urban areas at a broad scale, beyond just one city or community. The Wisconsin study is the first pilot to incorporate the full panel of urban plots throughout the state and to integrate those with the corresponding FIA data. This report accomplishes several objectives:

1. It documents the utilization of an established FIA plot system and FIA/FHM data measurement protocols to capture information about urban forests. This fills a previously identified data gap.
2. It demonstrates the use of the Urban Forest Effects (UFORE) Model in data analysis to quantify urban forest structure and function.
3. It establishes a protocol for delimiting urban boundaries.
4. It quantifies, for the first time, the status and condition of urban forests on a statewide basis.
5. It establishes a pest risk assessment for Wisconsin urban forests.

The full report can be obtained from the Wisconsin Department of Natural Resources.