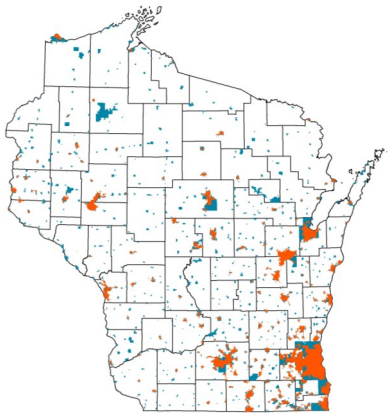
WISCONSIN URBAN FOREST ASSESSMENT

WISCONSIN'S URBAN FOREST RESOURCE:

According to a 2012 Pilot Study:

- Wisconsin has an estimated 42.8 million urban trees, with a replacement value of $19.3 billion.
- Trees in and immediately surrounding Wisconsin's urban areas provide annual energy savings to residents of $79 million, remove $47 million worth of air pollution and store $507 million worth of carbon.

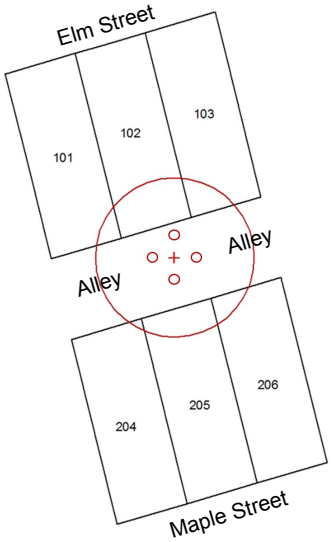


Urban areas of Wisconsin cover over 2.56 million acres. Census defined urban areas are shown in orange. Incorporated cities and villages and Census designated places (CDPs) are shown in blue.

In continued recognition of the health, social, environmental, aesthetic and monetary value of the urban forest, the State of Wisconsin is developing the **Wisconsin Urban Forest Assessment** program (WisUFA). This is a continuous statewide urban forest monitoring program that focuses on the entire canopy - both public and private trees. The program consists of the following components: a continuous plot-based inventory, a recurring urban tree canopy assessment and the aggregation of existing urban tree inventory data.

By sampling the characteristics of urban trees, their benefits can be quantified, valued and their management consequences evaluated. Elected officials, planners, land managers and private property owners can use this information to help maximize the benefits of their trees and accomplish their goals for their communities and properties.

PLOT-BASED INVENTORY - URBAN FOREST INVENTORY AND ANALYSIS (UFIA):



UFIA plots will be located on both public and private lands, often with more than one ownership occurring on a single plot. Each plot (shown in red) consists of a 1/6th acre subplot (48.0' radius) and four 1/300th acre microplots (6.8' radius) within the subplot.

Despite all the benefits of the urban forest and the need to know more about them, urban forests are not currently covered by a continuous wall-to-wall inventory and monitoring system like rural forests. An initiative in the 2014 Farm Bill called for the Forest Service to expand the Forest Inventory and Analysis (FIA) program to include sampling of the nation's urban forests. FIA is teaming up with states to implement an annualized inventory of trees in urban settings to monitor their status and trends and assess their ecosystem services, values, health and risk to pests and diseases.

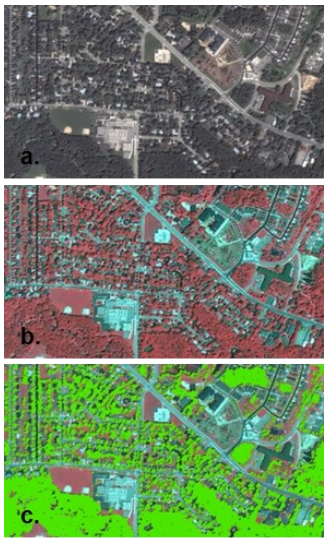
The Forest Service is initially focusing on metro areas of cities with populations greater than 200,000, such as Madison and Milwaukee. To obtain statewide and regional estimates of the urban forest, WI DNR is partnering with the Forest Service to expand the FIA program to sample urban forests in census urban areas throughout Wisconsin. Initial field data collection began in 2015, with 75 plots measured in Madison and Milwaukee. Statewide expansion will begin in 2016, with approximately 1,300 plots located throughout Wisconsin, measured on a 7-year cycle.

PROJECT GOALS:

⇒ Identify trends and patterns in the urban forest at state and regional levels including tree growth, mortality, damage, health, etc.
⇒ Provide estimates of urban wood volume and grade.
⇒ Assess species diversity within and across ownerships.
⇒ Obtain ecosystem services estimates for the urban forest at state and regional levels.

Urban Tree Canopy (UTC) Assessment

Publically available high spatial resolution imagery from the National Agriculture Imagery Program (NAIP) will be used to determine UTC percentages for communities throughout Wisconsin. The DNR is working with the University of Wisconsin Madison to develop and implement image classification methodologies best suited to the urban landscape. These efforts will result in percentage and area estimates of land cover types within metro and municipal boundaries including tree canopy, non-tree vegetation and impervious surface.



High spatial resolution satellite imagery: **a**. true color **b**. false-color **c**. false-color with urban tree canopy identified in green.

Project Goals:

⇒ Determine current UTC and provide partners with the data needed to assess available planting space and set future UTC goals.
⇒ Quantify increases and/or decreases of UTC over time.
⇒ Use the classified imagery as input data for the i-Tree Landscape web application which will spatially estimate ecosystem services of trees and help identify optimal locations to plant or protect trees to increase or sustain these services.

Urban Tree Data

The Wisconsin DNR urban forestry grant program has been providing financial assistance to public entities of Wisconsin since 1993. Among these grant funded projects are tree inventories. The third component of the UFA is to gather existing tree inventories and make this data readily available to the public. The grant program requires entities to submit their grant-funded inventories to the Department, but we hope non-grant funded inventories will be submitted as well. In addition to collecting these inventories, we may look to engage citizen scientists to add their trees to the database. This will create an even more robust data set that crosses ownership boundaries while increasing public awareness and appreciation of the urban forest resource. We also hope to obtain ecosystem services estimates for these data derived from i-Tree.

Project Goals:

⇒ Aggregate existing community tree data into one easily accessible database.
⇒ Provide data on the composition, structure and condition of collections of individual urban trees.
⇒ Engage citizen scientists to participate in data collection.
⇒ Provide ecosystem services estimates.

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