i-Tree Eco Analysis — Grand Rapids, Michigan

Introduction

Urban forests play an important role in our daily lives; they provide many economic, environmental, and social benefits and can have far-reaching effects on a community's quality of life. Trees within the urban forest remove pollution, store carbon, produce oxygen, improve health, and reduce energy uses. Urban forest composition has a direct affect on associated benefits. Recognizing the importance of their urban forest, the city of Grand Rapids participated in an i-Tree Eco assessment as part of a larger United States Forest Service grant funded project with a goal of establishing regional i-Tree Eco reference cities utilizing high resolution urban tree canopy assessments.

i-Tree Eco allows users to gain a better understanding of their community's urban forest structure, ecosystem function, and overall value. Utilizing data from over 200 urban forest plots 1/10th of an acre in size, Grand Rapids assessed the extent of its urban forest and associated benefits. These results provide a statistically valid baseline for developing resource management decisions, goals, and policy. Additional stratification of the data by land use provides even more detail on urban forest composition.

Grand Rapids i-Tree Eco Plot-Based Inventory
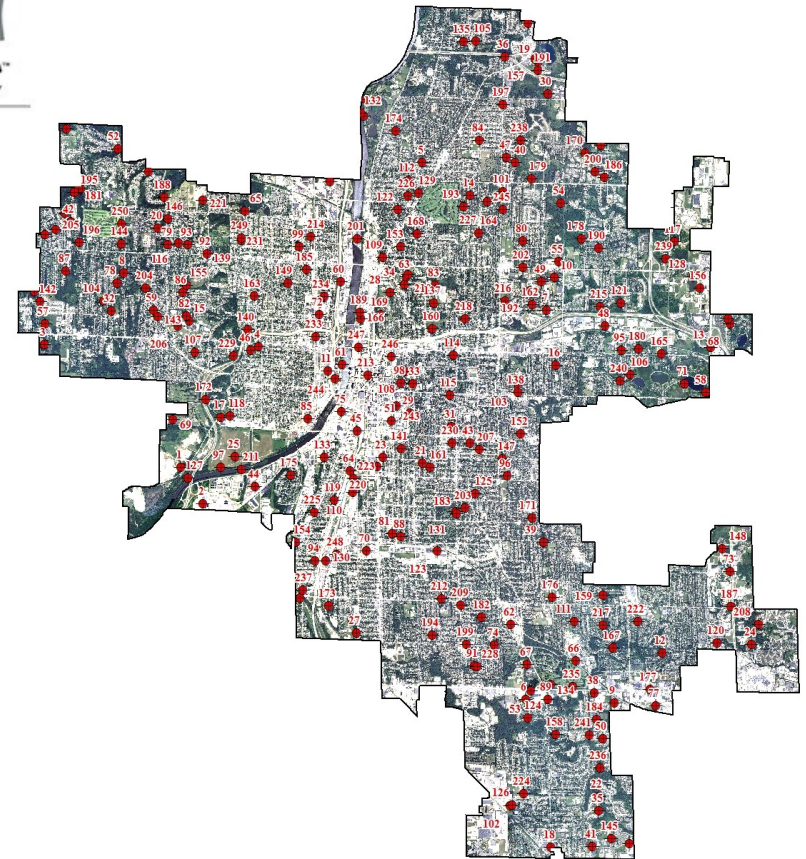
i-Tree Eco allows for customizable plot based sampling of the entire urban forest. Plot based inventories as depicted within the map (above) provide a cost effective means for assessing the entire urban forest. Davey recommends stratification of plots based on land use or meaningful community geospatial boundaries. Stratification of i-Tree Eco data can further assist with planning the urban forest in a detailed manner.

Grand Rapids i-Tree Eco Results	
i-Tree Eco UTC	23.8%
Total Trees	1,283,000
Trees/Acre	56.2
Most Important Species	American elm, sugar maple, and white ash
Total Benefits	**$817,635,371**

DAVEY RESOURCE GROUP
A Division of The Davey Tree Expert Company

Grand Rapids Urban Forest Benefits

Results

The city of Grand Rapids provides the community with over **$817 million** in benefits. These benefits are a product of trees in public and private lands. The ability to determine the extent of urban forest resources within specific land uses can lead to improvements in ecosystem services, human health, forest structure, and reducing pest susceptibility through planning.
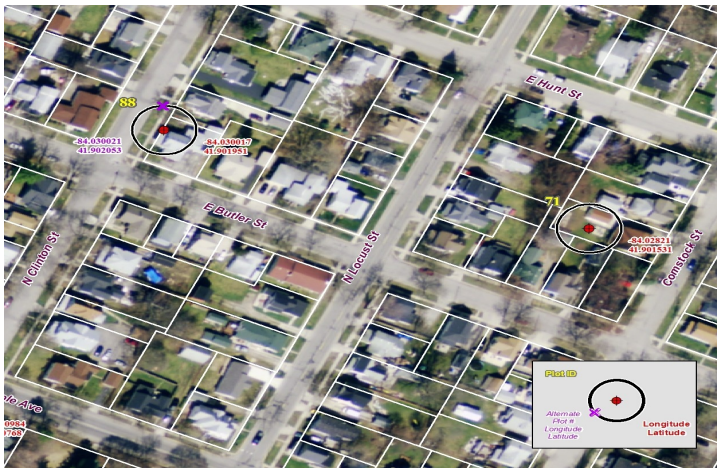
Close up of i-Tree Eco plots

Pest and Disease

Urban forest susceptibility to specific pathogens is of serious concern with the emergence of Emerald Ash Borer (*Agrilus planipennis*) throughout Michigan. Grand Rapids' ash trees make up **8.9%** of the population and are susceptible to **$53.2 million** in total losses. Understanding the threat invasive pests and diseases pose to com-munity urban forest benefits is a critical step in proactive management.

Economic

Trees are assets structurally with the ability to store carbon and aesthetic value. Grand Rapids' trees store **227,000 pounds** of carbon each year worth **$16.2 million** and their appraised value is estimated at **$791 million** to replace.

Next Steps

Urban forests are complex resources that vary regionally. Obtaining a better understanding of the urban forest and implementing effective planning can vastly improve the community. There are specific actions that can be taken with respect to i-Tree Eco:

- Share results with community members
- Engage stakeholders to involve themselves in the planning process
- Advocate for funding based on the realized resources
- Create urban forest management initiatives based on land use

Environmental

Trees perform unique ecosystem services that provide value to the community. Grand Rapids' trees provide **$5.3 million** in benefits by removing over **236 tons** of pollution and carbon each year. Environmental benefits are dependent on urban forest structure.

Social

Pollution related health incident reduction benefits in Grand Rapids are reinforced by Environmental Benefits Mapping (BenMAP) reporting developed by the Environmental Protection Agency. Grand Rapids' BenMAP benefits are **$3.1 million** which will continue to grow with proper management.
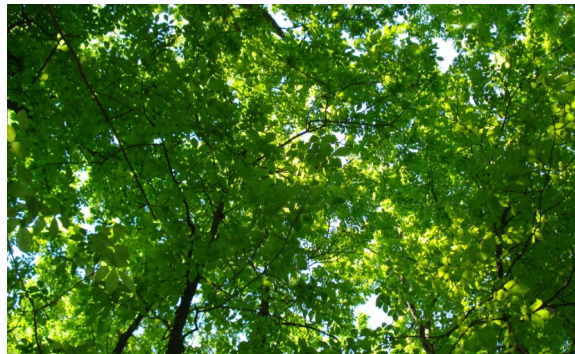
Trees provide a great deal of benefits and the community can help in assuring those benefits are protected. Strategic planting and community involvement in events like Arbor Day can be utilized as opportunities to ensure a healthy and strong urban forest.