Digging into i-Tree

with Scott Maco, Urban Forester, The Davey Institute

Our city is exploring the idea of setting an urban tree canopy goal. As such, I'm looking for a first step towards understanding our city's current canopy, as I haven't yet been able to convince our city manager that a more thorough urban forest assessment is worth the cost! Can i-Tree help me get a simple estimate of our canopy and the benefits they provide?

One of the best recognized ways to understand the extent of your city's canopy and the benefits it provides—essential to winning over city managers—is to do an i-Tree Eco analysis. With i-Tree Eco, you will not only determine the amount of canopy you have but how many trees you have and what each of them is contributing in environmental services at the species and individual tree level. For example, using i-Tree Eco data, cities have quantified how much more canopy is needed to reach air quality attainment standards.

Another new tool for canopy analysis and goal setting is commonly referred to as Urban Tree Canopy (UTC) assessment. The goals of this type of assessment are different than an i-Tree analysis, being limited to the following:

1) How much tree canopy do I have?

2) How much tree canopy could I have?

Using high-resolution satellite imagery of land cover in combination with the city's infrastructure datasets, very accurate information can be derived through GIS analysis to answer the two questions above. Not only do you get an understanding of how much more total canopy you could have, but you get information on exactly where in the city that planting potential exists. This can be valuable information for communities that will use their tree canopy goals to jumpstart planting initiatives.

Either one of these tools can be invaluable to cities wishing to set canopy goals based on local conditions and environmental concerns. Together, however, they can provide the foundation for not only setting appropriate goals, but planning for costs, timing of planting, species mix, and multiple metrics to measure success. The issue, however, is not whether these analyses are a good idea, but having the resources necessary to complete the project.

Field inventory data collection takes planning, management, and staff time, while acquiring high-resolution land cover imagery can cost tens of thousands of dollars before analysis even begins. Luckily, for those who are looking for a starting point to begin talking about setting canopy goals—and the tools and resources needed to make the best local decisions—i-Tree has a new tool that may be able to help: i-Tree Vue.

To get started in advocating for more trees or for the resources to conduct more thorough analyses, a broad estimate of canopy and tree-related benefits is helpful. i-Tree Vue is the newest component of the i-Tree suite and was developed for this purpose. It allows you to make use of freely available national land cover datasets (NLCD) to assess your community's tree canopy extent, some of the ecosystem services provided, and effects of different planting scenarios on future benefits.

Within minutes—literally—a user new to i-Tree and having no GIS-related skills can have broad regional estimates of tree canopy, air pollution removal, and carbon storage and sequestration. Field data is not required and neither is GIS software. "Vue" was designed as a solution for people who simply want to get a ballpark estimate of what exists now and what the future potential is. With this in mind, however, it is also important to consider Vue's limitations.

Relying on NLCD 2001 as a data source, the imagery is relatively coarse at 30-meter resolution. At this level, detail such as individual trees will not be discernable and canopy cover can be underestimated as a result. Likewise, as local, individual tree characteristics, weather, and pollution variables are unknown, i-Tree Vue uses national and state average estimates for ecosystem services on a per-unit area of tree cover. Because these variables can differ significantly at the local level, the estimates provided should be considered first-order approximations.

Despite these limitations, users needing a simple way to visualize differences in existing cover and services as well as potential changes in benefits with changes in tree cover will find value in Vue. While the estimates cannot be considered final enough to make strategic management decisions for setting goals or optimizing canopy, they can be a key stepping stone to more accurate estimates through i-Tree Eco, Streets, or UTC analyses.

i-Tree is in the public domain and is freely accessible by visiting *www.itreetools.org.*

"Digging into i-Tree" is meant to be an ongoing forum for Scott Maco to field questions from SMA members about the i-Tree suite of tools. Please send general questions you would like answered in this column to digging@itreetools.org. Technical i-Tree support is available by visiting www.itreetools.org/support.