

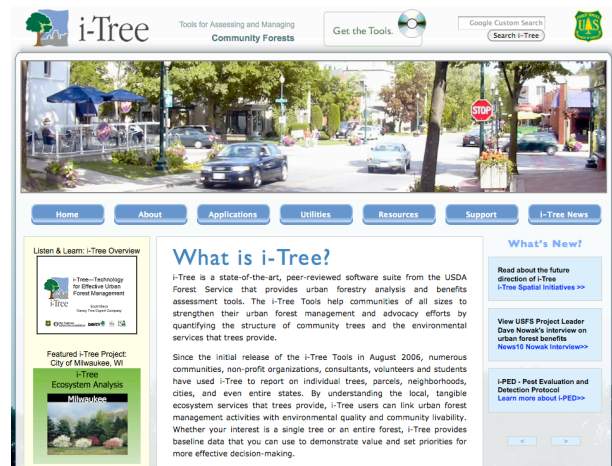
## USFS Pacific Northwest Research Station: Science Initiative

### i-Tree Community: Developing a New i-Tree Analysis Module for the U.S.

February 4, 2010 :: Kathleen Wolf, kwolf@uw.edu

#### 1. i-Tree Introduction

i-Tree is a suite of analysis software tools provided by the USDA Forest Service for urban stakeholders. Modules are in the public domain and are available online at no charge and serve to quantify the structure of community trees and the environmental services that urban forests provide, including economic valuation. The i-Tree Tools help communities of all sizes to strengthen their urban forest management and advocacy efforts. Since release of the i-Tree Tools in August 2006, numerous communities, non-profit organizations, consultants, volunteers and students have used i-Tree to report on individual trees, parcels, neighborhoods, cities, and even entire states.



<http://www.itreetools.org/index.shtm>

#### 2. Proposed New Module – i-Tree Community

The current i-Tree modules provide ecosystem services analysis based on city tree and canopy data inputs. The analysis algorithms largely focus on biophysical benefits and functions. The only representation of socio-economic ecosystem services is hedonic and market analysis of residential properties. Yet about 40 years of social science research points to an extensive and diverse array of human health and well-being (HHWB) benefits that are provided by the human experience of nature within build environments. These benefits accrue at all human scales: individual, household, neighborhood, and community. A comprehensive approach to communicating HHWB benefits will provide another set of tools to demonstrate why urban greening is an integral element of urban systems. This knowledge will appeal to stakeholder groups that have not traditionally been included as partners in green infrastructure efforts (e.g., public health, human services, therapy and healing facilities).

#### 3. i-Tree Community Research and Development

A multi-stage effort includes these activities:

**a. Research Assessment and Summary.** The first step is to assess and compile scientific studies on urban nature experience and HHWB. This literature is extensive but is located in publications across many disciplines (psychology, sociology, geography, urban planning, urban forestry) so has not previously been collected and presented in a focused way. A bibliographic review of HHWB benefits is now underway at the University of Washington (PI, Kathleen Wolf) to be completed by December 2010.

**Geospatial Modeling.** Once the full range and scope of human well-being benefits are understood they can be depicted as a map-based analysis to demonstrate the importance of urban ecosystem planning and management for human functioning and health. Positive correlations and relationships are highly likely between the presence of urban greening (now readily mapped) and psychosocial outcomes (mappable effects such as physical activity or reduced crime rates).

**Economic Valuation.** Once the full range and scope of HHWB benefits are understood it is then possible to express those benefits in economic terms. Well-being benefits are intangible, non-market “products” that urban greening provides. Economists have developed a number of strategies for non-market valuation (such as public health benefits and costs) and such approaches could be applied to psychological and social outcomes across entire human populations of cities and towns.