

Assessing the Benefits of Urban Forestry in Mojave Desert Communities

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Abstract

As the climate and environment change due to human activity, an understanding of the existing natural resources becomes paramount. Urban forests of Mojave Desert communities have the potential to reduce air pollution, heat island effects, and energy consumption. Regions throughout the globe have utilized models to quantify such benefits, but studies seem to be primarily conducted in temperate areas. Arid regions have drastically different climate, vegetation, and water availability from those modeled, and questions arise as to the transferability of cost/benefit analysis models to these areas. i-Tree is a free, peer-reviewed software suite developed by the USDA Forest Service that can provide information on species distribution and the monetary benefits of an urban forest in the categories of energy, storm water, air quality, carbon dioxide, carbon stored, and aesthetic value. The objective of the USEPA's Southwest Ecosystem Services Program (SwESP) is to develop and implement methods, models, and tools to map and assess the condition of southwestern ecosystems. To demonstrate the functionality of i-Tree in desert landscapes, sample data was obtained from the City of Las Vegas Planning and Development department and analyzed using i-Tree Streets. Results indicate i-Tree analysis is applicable in arid regions if irrigation costs and benefit prices are accurately estimated. Future studies will focus on the utilization of additional i-Tree modules to understand the relationship between southwest urban forestry, air quality, and climate.

Keywords: i-Tree, inventory, southwest, arid, ecosystem services.