

Assessing the Long Term Impacts and Costs of Urban Tree Canopy Loss

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ABSTRACT

Municipal forestry programs spawned and strengthened by the need to reforest millions of American elm trees lost to Dutch elm disease (DED) in the 60s, 70's and 80's when government coffers were comparatively rich, are increasingly challenged in today's tight fiscal climate to sustain a healthy urban forest at risk to EAB, ALB, and other destructive exotic forest pathogens. Sixty years after DED was first detected in Milwaukee (1956), the City's urban tree canopy (UTC) is still recovering from the loss of 135,000 elm trees to DED. And now, 17% of the City's UTC is threatened by Emerald Ash Borer.

Historically, cost-benefit analyses driving community pest management strategies have focused on forest structure loss and risk management costs, (treatment, removal and replacement costs), but have not considered the cumulative ecosystem service benefit losses accrued over a 50-100 year UTC recovery timeframe, which grossly underestimates the total cost of UTC loss on impacted communities.

Milwaukee's case study assessed historical changes in UTC from leaf-on aerial and satellite imagery acquired from 1956 through 2013, and applied i-Tree ECO retrospectively in combination with growth modeling and economic data to quantify the cumulative ecosystem services benefit loss and costs attributed to DED. The results of this model were also applied prospectively for Emerald Ash Borer. This broadened understanding of the long-term impacts and costs associated with UTC loss provides Milwaukee and other communities with results that can support resource and policy decisions for sustainable urban forest management.

BIOGRAPHY

Ian Hanou has 18 years of private sector experience. He earned a BS in Forest Management & GIS from Colorado State University and founded Plan-It Geo in 2012. He specializes in urban forestry software, GIS, remote sensing, green infrastructure, and ecosystem services analysis. He has managed over 300 urban forestry assessment and technology projects. At Plan-It Geo, Ian directs business development, senior project management, administration, and serves as product owner for the Tree Plotter suite of software. In 2011, the Society of Municipal Arborists honored Ian with an award for innovation in tree planting prioritization using GIS. He lives in Colorado with his wife and two children where he has summited all 54 mountains over 14,000 feet.