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Measuring Tree Height Using Pictometry Hyperspatial Imagery

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Urban Tree Height Assessment using Pictometry Hyperspatial 4-inch Multispectral Imagery

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Abstract

Tree height is a critical variable of forest inventory assessments, and estimating the height of trees has been a component of forest inventory assessments for decades. The actual tree height of 60 open-grown baldcypress (Taxodium distichum) trees measured with a telescopic height pole were compared to Pictometry hyperspatial 4-in. multispectral imagery estimated tree height on the campus of Stephen F. Austin State University, Nacogdoches, Texas. Linear correlation coefficients (r) between actual tree height and Pictometry-estimated tree height for all 60 trees and the shortest 30 and tallest 30 trees were > 0.997 for all r values. Pictometry estimated tree height was within, on average, 1.77, 2.15, and 1.40% of actual tree height for all 60 trees, the shortest 30 trees, and the tallest 30 trees, respectively. All three paired t-tests, for all 60 trees, the shortest 30 trees, and the tallest 30 trees, resulted in a P value >= 0.08, indicating that there was no statistical significance between actual and estimated tree height at a 95% confidence level. Pictometry-estimated tree height can be used in lieu of field-based tree height estimation for open-grown urban forests.