

A Critical Comparison of Conceptual and Measurement Models of Urban Forests

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Defining and measuring vegetation cover in urban areas is becoming an important aspect of urban infrastructure planning. The concept of an urban forest is often invoked to give meaning to measured urban vegetative land cover. Researchers have shown that diverse and often incompatible concepts seem to be nested within the umbrella term “urban forest”. The heterogeneity in urban forest semantics needs to be explored and formalized so that the varied concepts and epistemological foundations of different measurement frameworks can be shared amongst researchers and planners. In this paper, we share initial insights from our exploration of urban forest semantics and their spatial characterization. We analyze multiple definitions and measurement frameworks that have been used to map and characterize urban forests. We also discuss how pragmatic measurement models driven by available data and technology may seriously undermine the conceptual validity of the measurements. For instance, using the traditional approach of satellite imagery classification to map land cover is problematic because different urban settings require different operational definitions of the urban forest. Moreover, extremely high resolution imagery coverage is needed to distinguish between vegetation types in a small area. Ground surveys may provide detailed coverage but, apart from being time-intensive, often, limit measurement of upper foliage, and practically measure a different type of urban forest than that measured by satellites. Exploring such unintended ontological and epistemological shifts in urban forest representation and measurement exercises is the focus of this paper. We use East Baltimore as an example to represent such problems, especially in the context of small-scale studies.