Herbaceous Dreams: An Investigation of Indiana University's Tree Canopy Goal

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INTRODUCTION

Indiana University (IU) is said to be one of the most beautiful campuses in the nation. Much of that reputation can be attributed to the natural beauty of campus's green meadows, the red and white tulips, and the trees. IU's urban forest acts as campus's ecological backbone, providing aesthetic value and ecological services. In 2010, IU released their Master Plan which outlines everything from new buildings to plans to improve the urban forest. This paper will use the Master Plan to evaluate options for increasing the current urban tree canopy (UTC) from 20 percent to 40 percent. The Master Plan is a ten-year plan, however, it accounts for fluctuations in time and resources by allowing an extra ten years for projects that get pushed for those of higher priority. With that in mind, we urge that improvement of the urban forest on campus be prioritized fairly highly, recognizing that trees take decades to grow and reach full maturity, the point at which they provide maximum benefits.

A brief SWOT analysis was conducted for Indiana University's Campus Master Plan; introducing and highlighting its main issues and advantages to the 40% UTC goal.

Strengths	Weaknesses
▪ Campus-wide tree inventory in progress ▪ Bloomington Urban Forestry Research Group ▪ TreeCampus USA designation	▪ Removing existing infrastructure to make room for riparian buffer of Jordan River ▪ Poor species diversity ▪ Poor young tree maintenance ▪ Multiple tree maintenance entities ▪ Lack of dedicated tree fund
Opportunities	**Threats**
▪ Connect Dunn's Wood and Brian Hollow; continuous wildlife corridor to Griffy Lake ▪ Jordan River restoration initiative ▪ Removal of most of the surface parking at the IMU and the lot north of East Seventh Street at North Woodlawn Avenue for new development and a new Campus Green	▪ Limited space in core campus ▪ Constructing new buildings and expanding existing ones ▪ Memorable open spaces ▪ Ambiguity of future land use goals

Photo courtesy of Brynne Taylor

ARBORETUM

As the centerfold of the Indiana University campus, the Jesse H. and Beulah Chanley Cox Arboretum displays diverse flora and fauna. Defined as "a place where trees, shrubs, and herbaceous plants are cultivated for scientific and educational purposes" (Merriam-Webster.com) an arboretum can be an integral part of any campus. For Indiana University, the site of the former Memorial Stadium was relandscaped into a "greenscape" providing benefits like "visual relief from the streetscape, a striking backdrop to the … library and a pleasant place to walk or wander" (Capshew, 2012, p. 343). According to the Master Plan, the arboretum not only provides learning and research opportunities for students, but is a visual of the sustainability goals for environmental quality and land use (SmithGoup/JJR, 2009, p. 138). The arboretum embodies IU's diversity, representing the diverse student body through tree species, while also highlighting the management and restoration of the campus' landscapes (SmithGoup/JJR, 2009, p. 138).

It is not known for its density of trees, but rather for its high concentration of donor and memorial trees. In 2008 CTAC took charge and organized the naming tree program at Indiana University, starting with naming all 389 trees within the arboretum (Thurau, 2011). The Master Plan overlooks planting in the arboretum as an option; it focuses on connecting existing woodland habitats along the Jordan River (SmithGroup/JJR, 2009). In order for Indiana University to reach its 40% UTC goal in a timely manner, space in the arboretum needs to be utilized. As of 2006, an aerial image showed the arboretum had a 28.4% UTC (Thurau, 2009). A 2016 image from Google Maps shows the existing tree canopy cover. To calculate the existing UTC, i-Tree was used (i-treetools.org); showing the arboretum now has a 33% UTC. Since the arboretum will most likely remain undeveloped, it is an ideal spot to plant trees. Raising the UTC in the arboretum by 10% will help boost the UTC on campus. Alone, the arboretum cannot help IU achieve its 40% UTC goal; therefore, this space should be coupled with other initiatives like increasing tree canopy along the Jordan River.

METHODOLOGY

To reach 40% UTC, we estimate that 500 trees need to be planted each year. Twenty-five of these trees will be planted in the arboretum until it achieves our recommended 10% increase, and the rest will be planted along the Jordan River corridor. This number is based on the assumption that trees being planted will be well cared for and will have an 89% survival rate. However, survival rate still needs to be carefully monitored, and if the actual survival rate is lower or higher than the assumed 89%, the number of trees planted will need to be adjusted accordingly. Fewer trees will have to be planted in later years as well, since the trees that have matured will be providing significant canopy cover. At that point, maintaining those mature trees will become more important than planting new trees. Once the arboretum reaches its goal of a 10% UTC increase, planting efforts along the Jordan River corridor can be intensified. Estimates put it at around 40 years for UTC to reach the Master Plan's goal.

POTENTIAL THREATS

In order for Indiana University to increase its UTC by 20%, it must overcome several obstacles. The continuous growth of campus, more specifically new educational developments, is the frontrunner for limiting UTC. The expansion of the Jordan River corridor will require extensive reconstruction and may have prohibitive costs. Another potential threat stems from transforming one of the football tailgating fields into the new arboretum. Additionally, Indiana University often threatens its own plans to increasing tree canopy by not diversifying its tree population; mainly planting red maples. Human activity within the existing arboretum also poses a threat to increasing UTC. Improper mulching and mowing techniques pose a threat to the tree and its root systems, which could result in a decrease in UTC if the tree dies. Lastly, the funding and time required to increase UTC to 40% are limited.

RECOMMENDATIONS

➤ Ensure steady increase in UTC in lieu of timeline

➤ Expand existing Arbor Day celebration and student involvement

➤ Maintain health of canopy by adhering to maintenance standards

➤ Diversify tree population with new plantings: 10/20/30 rule

➤ Utilize Jordan River buffer zone and greenspace

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A 2016 Google Maps image of current tree canopy in the Indiana University arboretum