

Urban Forest Initiative

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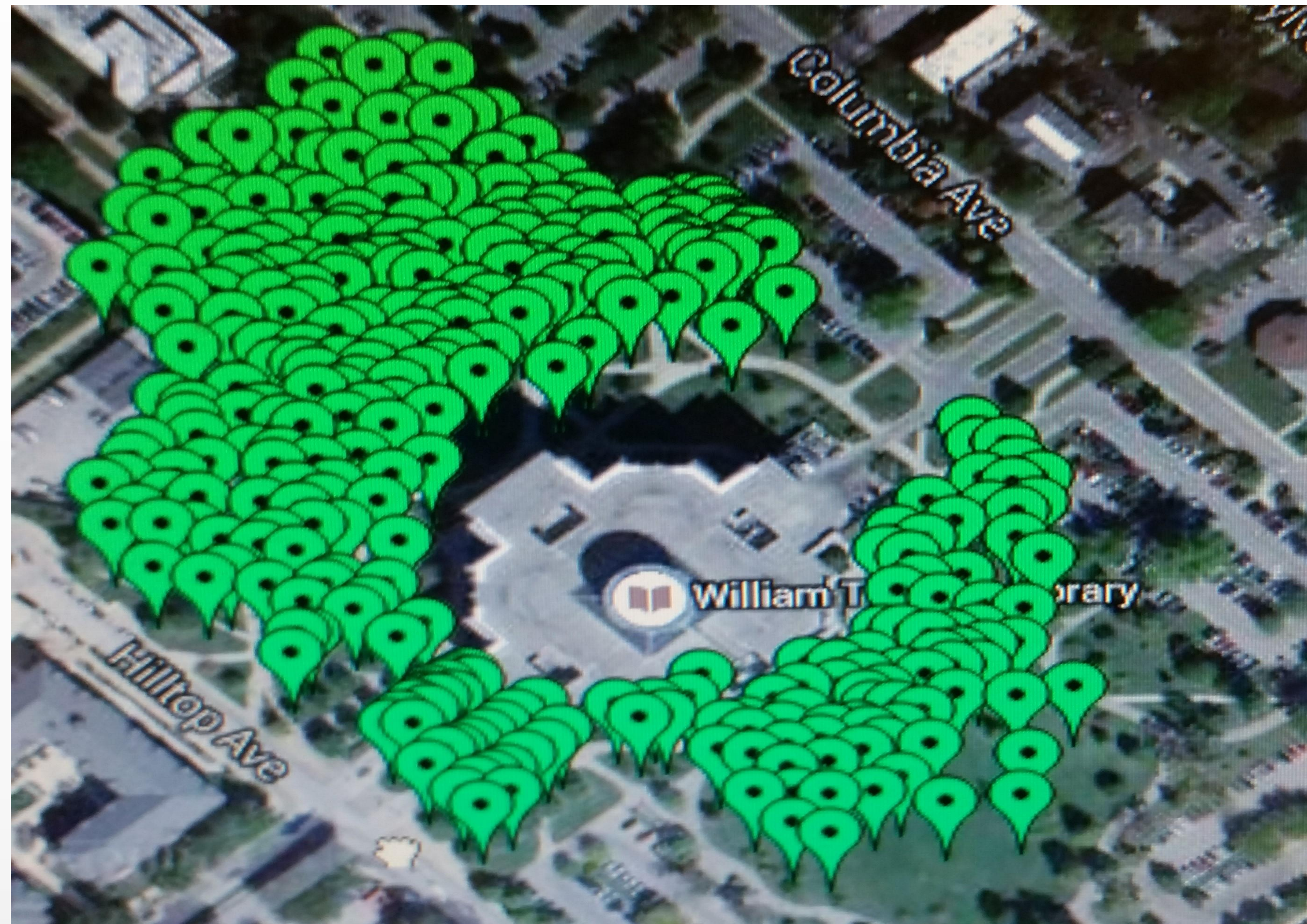
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Urban Forest Initiative Student Intern

The Urban Forest Initiative is a Tracy Farmer Institute for Sustainability and the Environment working group. Their mission is to advocate for and elevate the function, value and perception of urban forests in the Bluegrass Region, from the UK campus to broader regional communities, by providing a dynamic framework for opportunities to partner across organizational and community boundaries to enhance urban forests (Urban Forest Initiative).

This past spring I served as a student intern at the Urban Forest Initiative, working in collaboration with Jerry Hart in UK's Physical Plant Division. My internship encompassed two primary goals: assisting with tree care across UK's campus by assessing the health of newly planted and mature trees and helping to organize a service project, Mulch Madness, under the supervision of UFI staff member and M.S. Forestry student Nic Williamson. For my independent project, I studied the potential causes of chlorosis on willow oak trees on campus, which allowed me to use my focus in soil science.



Focused on assessing the trees around the William T. Young library and designed a map to measure benefits using i-Tree tools

Tree Health Assessment

UK contracted ArborPro Inc. to complete a comprehensive GPS tree inventory and GIS software program to assist in the management in urban forests during the summer of 2014 ("ArborPro", 2016). This information needed to be updated, so UK's Physical Plant Division would have renewed information on the state of campus trees. UK's campus has over 6,500 trees, so I picked the William T. Young library as an area to focus assessments on because it had many freshly planted trees as well as mature ones.

A spread sheet on the trees was filled out as I assessed them including criteria: (1) rating the tree on a scale of dead, poor, okay, good, great; (2) any noticeable characteristics or deformities for the tree; and (3) any recommendations for the tree that might improve the health or longevity of it. Most of the trees around the library simply needed to be de-mulched to correct the over-mulching done previously, or a quick pruning of dead limbs. Working on these tree health assessments allowed me to discover a research project for tree health and chlorosis.

Mulch Madness: Service Event



Student and faculty volunteers at "Mulch Madness" event

Mulch Madness is a once per semester service-learning project that facilitates student knowledge of tree health and care and also fulfills the service-learning event required for UK to be deemed a "Tree Campus USA" school ("Mulch Madness", 2015). I sent emails to all Greek organizations on campus and coaxed many CAFE major professors to offer students extra credit for attending. To make sure the project was also a "learning" event a survey was designed to be given before volunteers started mulching and after students had mulched, so we could see how much information was retained. 45 surveys were returned and there was a significant improvement in questions that pertained to mulching a tree. The event volunteers managed to mulch all 400 trees around the William T. Young library, providing the trees with protection from drying out, weeds, and lawnmowers. In response to the huge success of the event "Mulch Madness" will continue to be a bi-annual event on UK's campus.



Mulching at "Mulch Madness"

Willow Oak Chlorosis Research



Chlorotic willow oak on the left and a healthy willow oak on the right. Yellow coloration is the main sign of chlorosis.

Chlorosis is a yellowing of the leaves and their tissue, typically caused by the leaves producing insufficient chlorophyll, the molecule responsible for the normal green pigment in the leaves. This deficiency can be triggered by a multitude of factors such as disease, a lack of light, or it can be elicited by soil issues linked to magnesium, zinc, and iron ("U of I Extension", 2016). I noticed a willow oak that was showing chlorotic signs next to two others that were not showing any chlorotic symptoms. Lack of light or disease being the cause(s) here seemed unlikely, and I was interested in learning more about this from a soil perspective.

I took three soil cores from the chlorotic oak, three cores from the oak that appeared to have a pest, and three cores from the healthy oak. I took all nine cores to the soil lab and ran ammonium, nitrate, pH and a Mehlich III extractant test. An extraction test involves removing a solute from the solution so it can be measured, and in this case, it was used to determine the phosphorous, potassium, calcium, magnesium, and zinc in soil samples. A sample of twigs from the oak with a pest was sent to the Plant Pathology department who diagnosed it with anthracnose fungal infection. Anthracnose does little to harm the overall health of the tree, but could make it susceptible to chlorosis because it shares the same soil with the chlorotic oak. After running all of these tests and researching the topic we came to the conclusion that de-icing materials were causing the chlorotic condition to the tree.

Special Thanks To:

Dr. Mary Arthur, Nic Williamson, Amanda Williams for the opportunity to work alongside them at the Urban Forest Initiative.
Dr. Chris Matocha, Wes Morris, Martin Vandiviere for assisting me with my soil research project.
And all of the people who volunteered for "Mulch Madness"

Interested in Urban Forest Initiative work?
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References:

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