

## 2019 Progress update on Goals and Targets identified in the campus Tree Care Plan, developed in 2016 for Shawnee State University

The following black bulleted text reflects the campus tree care plan developed and submitted for initial recognition of Shawnee State University as a Tree Campus USA in 2016. The Blue text below each bullet summarizes the progress made during 2019.

### 1. Goals and Targets

- The perennial target for the SSU campus will be to increase the diversity of tree species on campus while also increasing the canopy coverage. A complete inventory of all campus trees began during 2011 with the ultimate goal of developing an interactive map that can be used for management and education. A 'dot map' and corresponding index was developed as part of an undergraduate research project by a student. Every other year (e.g. 2013, 2015, 2017) the biology Field Methods class conducts a random sample of campus trees and records vital statistics such as height and DBH. These data allow for monitoring of long-term campus tree growth and health. The current species list for all woody plants on campus is attached as an appendix at the end of the tree care plan.

During fall of 2019, the Field Methods class once again conducted a sample inventory of the campus trees to update the GPS coordinates and associated database. Growth, condition, abnormalities, additions, and removals of trees were noted and recorded. As indicated in previous updates, a new numbering/ labelling system for all trees on campus was implemented during 2018 using durable, plastic tags. This will allow more reliable data to be collected and better communication regarding specific trees and their health/ care. Further, all data was digitized by the Geographic Information Systems class into ArcMap software to create a new GIS linked to the database. This system will allow more precision in monitoring of tree health and guide planning efforts in the future. During spring 2019, a student project collected, recorded, and incorporated soil (texture, nutrients, pH) data into the database. This information was integrated into the GIS and will aid in future planning and plantings.

- SSU is expecting to release its next Campus Master Plan for the future of university planning in 2017 (last revision in 2008). The campus tree team is dedicated to promoting the campus tree plan to be incorporated as an integral part of this guiding document for the future of SSU, especially regarding tree maintenance, planting, removal, and protection. This has the potential to influence the landscape of SSU with regard to trees for decades.

SSU continued implementing several aspects of the university's Strategic planning process, including the new Facilities Master Plan. The campus Tree Care Plan developed by the Tree Care Team was provided to leadership involved in this process. Further, as part of new administrative restructuring, a new University-wide committee for Facilities and Technology was formed, including two members (one faculty, one facilities/ administration) of the campus tree care committee.

- During each offering, the Practical Horticulture class will actively promote health of campus trees through pruning efforts. This will serve as an authentic, experiential learning experience for SSU students to become interested in urban and landscape forestry and tree maintenance.

These practices will continue to be integrated into the curriculum of applied science courses at SSU.

In spring of 2019, 24 undergraduate students enrolled in the Practical Horticulture course. As a necessity to complete the course, students must participate in several service learning activities, including starting tree seedlings, tree planning, and tree pruning. The course counts as a Botany elective for the B.S. Biology degree, and under the General Education Program, which applies to majors across campus. This course is also included in the curriculum of the new Botany Minor and Certificate in Sustainable Landscape Management.

Additionally in spring 2019, 16 students in the GIS course continued to use the mapping of campus trees along with soil data as a class project. A link accessible web-app version of the tree map was created for use in planning and education.

In fall 2019, 17 students completed the dendrology course, where they contributed to tree planting efforts in conjunction with the city (see service learning), and collected seed to be used for next year's arbor day give-away trees (see below).

- A perennial goal of the SSU facilities department and tree care team is the reduction of non-native, invasive and/or noxious tree species from the campus grounds. As possible, invasive species which are already in place as landscape trees will be phased out and replaced with trees to encourage overall species and ecological diversity.
- In recent years, SSU has added many new properties to its holdings. Many of these properties are vacant or otherwise overgrown. Continued efforts will be made to further reduce invasive vegetation on campus owned lots (including, but not limited to, Amur Honeysuckle, Tree-of-heaven, and multiflora rose) through the use of herbicide treatment regimens and manual removal, as necessary. The campus tree inventory will be updated to reflect changes and additions on an on-going basis.
- To combat the impact of Emerald Ash Borer, efforts have been made and will make efforts to continue to treat (using Imidacloprid) the three mature White Ash trees on campus. Future treatments will include expanding the regular regime to include any smaller ashes, fringe trees, or lilacs (all Oleaceae) on campus.

Vigilance and monitoring of potentially affected species has continued with treatment applied as necessary. Additionally, Clearwing Lilac Borer was identified as damaging several Fringe trees during the previous winter. As the standard systemic treatment used for EAB is known to be ineffective (and ill-advised for a flowering species due to pollinators), a degree day model was used to predict emergence of adult moths and serve as an action threshold for residual pyrethroid treatments to be applied to woody stems. The prediction was developed as part of a class project of the Applied Biostatistics course. The facilities crew have continued to utilize the prediction and execute well-timed treatments as needed.

- To mitigate the effects of storm water runoff, a settling basin has been constructed behind a unit of university owned housing and the soccer complex. Native vegetation (including wildflowers, shrubs, and trees) have been encouraged to grow in this area. Increased vegetation would have many benefits to reduce erosion and runoff of contaminants into the waterway.

Efforts to remove invasive plants from the settling basin and thin volunteer trees (e.g. sycamore) have increase. Planting of American Cane in part of the habitat to serve as living water bar was completed by student volunteers.

- A concerted effort will be made to add new species to the campus landscape which will augment the trees currently in place with respect to ecological, historical, and cultural significance.

During 2019, the following species were added to the campus tree list due to plantings: English Walnut (*Juglans regia*), Ninebark (*Physocarpus opulifolius*), American Cane (*Arundinaria gigantea*), PawPaw (*Asimina triloba*), Peach (*Prunus persica*, heirloom cultivars), Pecan (*Carya illinoensis*), Buttonbush (*Cephalanthus occidentalis*, Butternut\* (*Juglans cinerea*), and grafted Apple\* (*Malus pumila*, c.v. McIntosh, Jonathan).

[\*indicates new species to be added to campus tree inventory; seedlings are currently being held in newly constructed tree nursery before planting throughout campus].

The committee is currently exploring options to add the following species in 2020: Hackberry (*Celtus occidentalis*), Hoptree (*Ptelea trifoliata*), American Chestnut (*Castanea dentata*), Umbrella Pine (*Sciadopitys verticillata*), and Pitch Pine (*Pinus rigida*). The committee received an on-going financial commitment (donation from former University President, Dr. Jim Chapman), which will be utilized to support these efforts.

Seeds of the following species were collected by students in the fall 2019 Dendrology course: Post Oak (*Quercus stellata*), Southern Red Oak (*Quercus falcata*), Chestnut Oak (*Quercus montana*), Bur Oak (*Quercus macrocarpa*), Pecan (*Carya illinoensis*), and American Yellowwood (*Cledastris kentuckea*). These seeds will be germinated and grown by the Horticulture class in spring 2020 to generate seedlings for the next Arbor Day celebration.

- We also hope to include additional interested parties as members of our campus tree care team during the following calendar year.

Student interest in campus tree initiatives has continued to increase with many students participating in the Tree campus event, Arbor Day celebration, and outreach events for the public regarding trees (i.e. Science in the Park, Evening of Science). Further, greater collaboration with the Portsmouth Tree City board has continued to increase. The two groups co-hosted the 2019 Community Arbor Day/ Earth day event and tree giveaway. In addition to growing and distributing the tree seedlings for the event, SSU students also planted the 2019 Arbor Day tree in Tracy Park. Near the close of the year, a number of trees and shrubs were donated to the City of Portsmouth and SSU by the Shade Tree Commission in nearby Chillicothe. Students in the dendrology course planted seven Leyland cypress along the newly created city dog park, which borders campus. A member of the SSU committee also became a Commissioner on the City Tree board, and student members of the SSU committee frequently attend city meetings. This work is poised to continue with great strength in 2020.